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DISEASES OF THE SKIN

DISEASES OF THE SKIN

A MANUAL FOR STUDENTS AND
PRACTITIONERS

BY

ROBERT W. MacKENNA, M.A., M.D., B.Ch.(EDIN.)

LECTURER IN DERMATOLOGY AT THE UNIVERSITY OF LIVERPOOL; HONORARY DERMATOLOGIST,
ROYAL INFIRMARY, LIVERPOOL; HONORARY DERMATOLOGIST, THE CHILDREN'S CONVALESCENT
HOME, WEST KIRBY; FORMERLY HON. DERMATOLOGIST AND MEDICAL OFFICER IN
CHARGE OF THE V.D. DEPARTMENT, DAVID LEWIS NORTHERN HOSPITAL, LIVERPOOL;
FORMERLY CAPTAIN (TEMPORARY MAJOR) R.A.M.C. (T.) AND DERMATOLOGIST
TO THE 1ST WESTERN GENERAL HOSPITAL, AND THE 57TH GENERAL
HOSPITAL, I.R.E.F.

WITH 36 COLOURED PLATES, 113 ILLUSTRATIONS IN THE
TEXT AND MANY FORMULÆ

SECOND EDITION, REVISED AND ENLARGED

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TO
MY WIFE

PREFACE TO SECOND EDITION

IN preparing the second edition of this textbook I have, as in its predecessor, kept scrupulously before me the needs of the student and general practitioner.

The whole has been carefully revised, much new matter has been added, and the book is enriched by the introduction of many coloured illustrations. Dermatology is passing through a phase of extraordinarily rapid growth, but I trust that my readers will find in this edition a balanced and up-to-date presentation of all the subjects dealt with.

My grateful thanks are due to Dr. W. Herbert Brown for his kindness in putting me in touch with Mr. Dunbar—the artist responsible for the coloured plates—and for permission to use an excellent illustration of *Dermatitis Herpetiformis*. I am also deeply indebted to Dr. Louis Savatard, who has lent me some excellent photographs from his collection; and to Mr. Bernard Chavasse for a coloured drawing.

It is a special pleasure to acknowledge the invaluable help given me by my Clinical Assistant Dr. Elizabeth Hunt in revising the proofs.

ROBERT W. MACKENNA.

RODNEY STREET,
LIVERPOOL.
March, 1927.

EXTRACT FROM PREFACE TO FIRST EDITION

IN preparing this book I have endeavoured to keep constantly before me the requirements of the student and the needs of the general practitioner. The former, whose curriculum is already overloaded, demands a concise yet adequate description of the essential features of the various diseases of the skin, together with such instruction in differential diagnosis as will enable him, in a doubtful case, to separate one condition from another.

The practitioner expects, in addition, plain and dogmatic directions as to treatment. The requirements of the two overlap and are complementary to each other. The pages that follow will show in what measure I have succeeded in meeting the needs of both.

In a work of this size it is impossible to include all the rarer varieties of skin disease. One must exercise a certain arbitrary selectiveness in deciding what is to be omitted. All the ordinary skin affections are, however, dealt with fully, and brief mention is made, in smaller type, of many of the rarer conditions met with in this country and the tropics. This has been done because it is essential for the general practitioner to have some knowledge of the more uncommon affections of the skin, as he is likely to be consulted about them in the first instance.

Classification is still the bugbear that besets every one who ventures to write a dermatological textbook. As far as possible I have adopted a classification based on etiology; but a point is soon reached where such a classification breaks down. Where the causal factor is undetermined I have based my classification on clinical appearances, only departing from this to group certain skin affections together because they are associated with some particular structure of the skin, such as the sebaceous glands. Such an arrangement is open to criticism, but it seems to me to present certain advantages for the student.

The background of this book is my own experience; but it would be ungracious not to acknowledge the inspiration and help I have received from the published works of other dermatologists. Among them I should like to mention chiefly the textbooks of Macleod, Sequiera, Whitfield, and my former teacher, Norman Walker. I am a debtor to American dermatology through the works of Highman, Stelwagon, and R. L. Sutton; to the French school through the textbooks of Brocq, Darier, Dubreuilh, Gougerot, and Sabouraud; and to the German school through the publications of Bettmann, Frieboes, Max Joseph, Lesser, Wolff-Mulzer, and Riecke. Further, I have made full use of many valuable articles that have appeared in *The British Journal of Dermatology and Syphilis*, and *The Archives of Dermatology and Syphilology*.

ROBERT W. MACKENNA.

RODNEY STREET,
LIVERPOOL.

January, 1923.

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DISEASES OF THE SKIN

CHAPTER I

ANATOMY AND PHYSIOLOGY OF THE SKIN MORPHOLOGY OF SKIN LESIONS

THE skin is an organ of the body. It is something more than a covering for the subjacent structures. It is not, so to speak, the wrapping-paper round a parcel, but an integral part of the parcel itself. It is a highly organised structure, with definite and important functions. It is one of the chief guardians of the gateways to the citadel of life. An intact epidermis is a powerful first line of defence against the invasion of the body by the micro-organisms of disease. A tiny invisible abrasion of the skin may give entrance to the hosts of death. The importance of the skin is established if we remember its high lineage—it is derived, in part, from the same embryonic layer as the central nervous system, the most highly organised of all the bodily structures.

HISTOLOGY OF THE NORMAL SKIN

The integument consists of three layers: (a) an outer layer—the *epidermis* or *cuticle*, (b) a deeper layer of vascular tissue—the *dermis* or *corium*, and (c) the subcutaneous tissue or *hypoderm*. (See Fig. 1.)

The **epidermis** is divided, chiefly for purposes of description, into four strata. From without inward they are: (1) the stratum corneum, (2) the stratum lucidum, (3) the stratum granulosum, (4) the stratum mucosum.

1. The **stratum corneum** consists of several layers of non-nucleated, flat, horny cells superimposed upon each other. It differs in thickness in different parts of the body, being thickest where most protection against friction is required, *e.g.* on the soles and palms, and thinnest in such regions as the groins, the inner aspect of the axillary folds, and the face. The superficial cells of the stratum corneum are being constantly shed. The protoplasm of the cells has been changed into a fatty or waxy substance which makes the stratum corneum waterproof.

2. The **stratum lucidum** lies immediately beneath the horny layer, and consists of somewhat hyaline flat cells without nuclei.

Around the cells, and also in their substance is found an oily fluid in tiny drops, called *eleidin*.

3. The **stratum granulosum** comes next. It is composed of one or more layers of spindle-shaped nucleated cells, and is called the granular layer because in stained sections a number of granules of keratohyalin are seen to spread from the nucleus to the margin of each cell.

4. The **stratum mucosum**, or **stratum Malpighii**, lies between the granular layer and the **corium**. It consists of several layers of cells, and is that part of the epidermis which is in constant evolution, to make good the ravages produced in the layers of the skin above it by friction and contact with the outer world. The cells situated most deeply rest on a basement membrane which separates them from the corium. Columnar in shape, they have oval nuclei. These columnar cells elongate, their nuclei divide, and then the cell follows suit, splitting into a polyhedral nucleated cell, and a small columnar cell. The polyhedral cells are pushed up, and form the *prickle cell layer*—the middle layer of the stratum Malpighii. The prickle cells owe their appearance to and derive their name from a series of filamentous processes which unite them. The continuous evolution of new polygonal cells from the actively germinating columnar epithelium pushes the prickle cells upwards. As they approach the surface they alter in shape and character. Flattened by pressure they gradually become horny through evaporation and the conversion of their protoplasm into keratin, and they ultimately take their places as non-nucleated stratified cells in the stratum corneum.

The pigment of the skin which is responsible for racial and individual differences in colour is contained in the deeper layers of the stratum mucosum.

The **corium**, **dermis** or **cutis vera** is situated beneath the epidermis. The epidermis does not lie upon it in a level layer, as one book may lie upon another, but fits into it by a series of digitations—the interpapillary processes—between which the papillæ of the corium grow up.

The corium consists of a dense network of fibrous and elastic tissue, and contains (*a*) blood-vessels and lymphatics, (*b*) nerves and tactile corpuscles, (*c*) glandular structures and the hair follicles. For purposes of description it is divided into two strata :

1. The **papillary layer**, next to the epidermis, with which it interdigitates. The papillæ, from which it takes its name, are conical processes, with a single or divided apex, and are most abundant in those areas of the skin like the palmar surface of the fingers where the tactile sense is most highly developed. Each papilla is well supplied

ANATOMY AND PHYSIOLOGY OF THE SKIN

with blood-vessels, and most of them contain one or more nerve filaments. In specially sensitive parts of the skin the nerve filaments end in touch corpuscles. The papillæ also contain lymphatics.

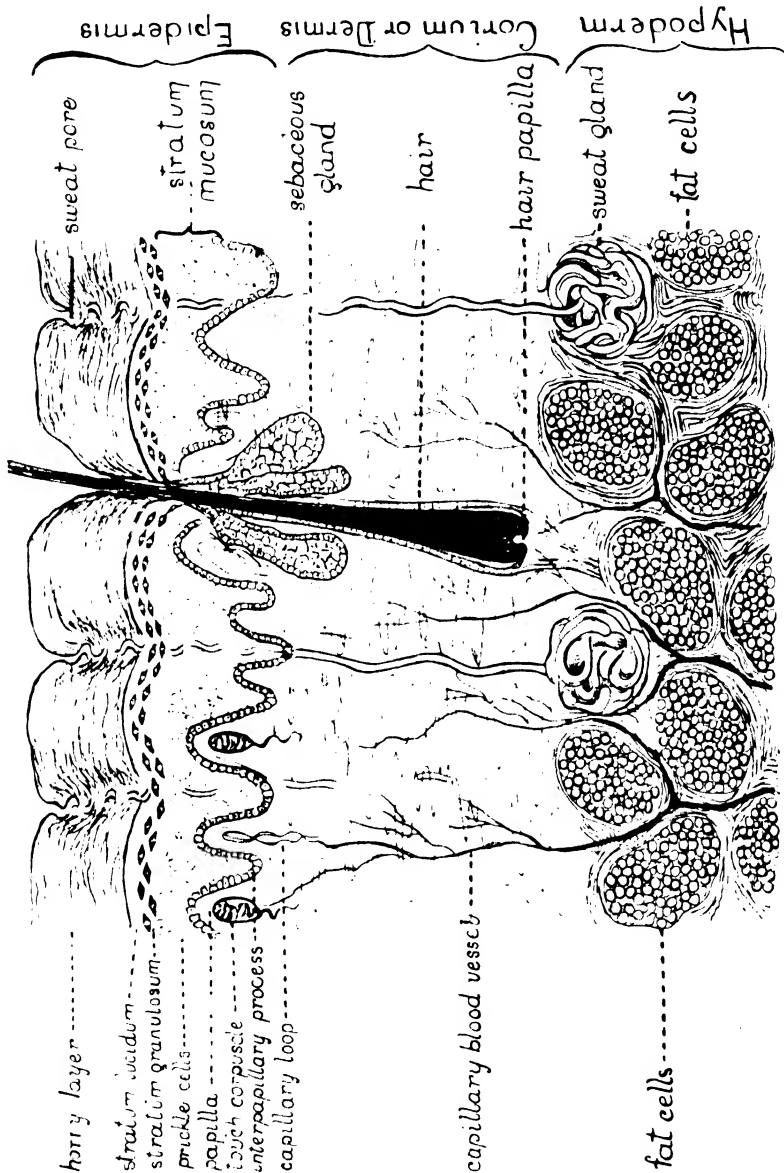


FIG. 1.—Diagrammatic picture showing the structure of the skin.

2. The **reticular layer** of the corium lies immediately under the papillary layer and consists of a dense network of bundles of connective tissue, which are continuous with the connective-tissue strands in

the papillæ. This layer contains many elastic-tissue fibres, and it is their presence which permits of the stretching of the skin in such conditions as pregnancy and dropsy.

The Hypoderm.—The skin, as a whole, rests upon and is attached to the hypoderm or subcutaneous tissue, which is composed of loosely woven bundles of connective tissue, which enmesh clumps of fat cells.

The sweat glands and the deeper hair follicles are situated in the hypoderm.

Blood Supply.—The blood supply of the skin is derived from two plexuses, one of which is situated in the subcutaneous tissue, and the other in the papillæ. The deeper gives off little arterial twigs which pass into the papillæ and divide into capillaries which reunite to form a tiny vein which passes out from the bases of the papillæ to join the deep plexus again.

The deeper plexus supplies branches to the hair follicles, the sweat and sebaceous glands.

The **lymphatic circulation**, similarly, consists of two plexuses, whose distribution coincides more or less closely with that of the blood-vessel plexuses. But, in addition, there are lymph spaces in the corium, and lymph passes by exosmosis through the apices of the papillæ into the deeper layers of the epidermis.

Nerve Supply.—Both medullated and non-medullated nerve fibres are found in the skin.

The medullated fibres form a kind of network in the true skin, and many of them terminate in the apices of the papillæ, in little oval bodies known as touch corpuscles. These touch corpuscles, of which there are three varieties, viz. Meissner's bodies, Krause's end-bulbs, and Paccinian corpuscles—are found in greatest number in areas like the finger-tips where tactile sensation is most highly developed.

The non-medullated fibres traverse the true skin and end apparently in the stratum mucosum. They are believed to supply the sweat glands, the blood-vessels and the fibres of the arrectores pilorum, those small bands of unstriped muscle which cause the hair to "stand on end," and which aid in extruding the contents of the sebaceous glands.

Muscle.—Smooth-muscle fibres are found in the skin of the scrotum, the areolæ of the nipples and the eyelids. Their contraction causes a puckering of the skin. Striped-muscle fibres run from the platysma and the muscles of expression in the face into the true skin.

The contraction of these muscles induces corresponding movements in the skin, and in this way the skin may wrinkle in a frown, or dimple in a laugh.

The **glandular system** in the skin. There are two varieties of glands in the skin, the sweat and the sebaceous glands. They are dealt with later (p. 389 and p. 370).

Hair and nails are also described later (p. 357 and p. 429).

Pigment in the Skin.—As already stated, the pigment in the skin lies in the deeper layers of the stratum mucosum. Its function is protective. It protects against the prejudicial effects of the sun's rays. The skin of the negro is rich in pigment; and the sun's rays falling upon the skin of a white man produce "sunburn," which is a form of protective pigmentation. The white colour of the Circassian skin is due to anæmia of the integument, and to the fact that the cells of the epidermis and cutis are somewhat translucent, while the fat in the hypoderm reflects the light that has penetrated the cutis.

THE FUNCTIONS OF THE SKIN

1. **Integumentary.**—The skin clothes and supports the underlying soft tissues with a supple, tough and elastic covering which allows of free movement. It also protects the body against invasion from without by harmful micro-organisms.

2. **Regulation of Temperature.**—Through its copious blood supply and the large number of sweat glands imbedded in it the skin is largely concerned in the regulation of the body temperature.

3. **Respiratory Function.**—In man this is practically negligible, but in animals like the frog the respiratory function of the skin may be so well developed that the animal can live without lungs.

4. **Excretory Function.**—The sweat glands are valuable assistants to the kidneys in the elimination of water and waste products. The amount of fluid perspired varies with the temperature of one's surroundings and the nature of one's work. In a normal healthy man it averages about two pounds weight per day—and 0·08 per cent. of that is urea. During long-sustained, severe muscular effort 10–12 per cent. of the total nitrogen output of the body may be eliminated in the sweat. Sweat contains also sodium chloride, with small traces of fat, fatty acids and cholesterol.

5. **Absorptive Function.**—Except to certain fatty substances, or substances rubbed up in a fatty excipient, the absorptive powers of the unbroken skin are negligible. Goose-grease, lanolin, cod-liver oil, and lard may all be made to penetrate the unbroken skin by inunction, and the inunction of mercury in a suitable fatty base is an excellent method of administering that remedy. Watery fluids are not absorbed by the skin unless the cuticle is abraded.

6. **Sensory Functions.**—The skin is one of the chief organs by means of which we get into conscious relation with the external world. It is the organ through which are distributed the outlying stations of the receptor-mechanism for sensations of touch, pain, heat, cold, and sensations of a disagreeable or pleasant kind. The importance of the skin in bringing the higher nervous centres into touch with the

external world is demonstrated in the case of Helen Keller, who, though deaf, dumb, and blind, has been educated to a high pitch by the careful and organised use of the sensory functions of the skin.

The sensitiveness of the skin varies in different regions. It is, *e.g.*, highly developed in the finger-tips and palms, and, as Crile has shown, there is a well-marked relationship between the local sensitiveness of the skin and the importance of an organ or structure lying immediately underneath it.

7. Psychic Functions.—In virtue of its embryological relationship with the central nervous system, for the skin is developed partially, and the nervous system wholly, from the epiblast, it is one of the chief organs through which emotion is expressed. Fear blanches the skin, and may give rise to a paralytic oozing of cold perspiration; horror may cause the skin to contract till it becomes like goose skin, and the hair on the head may actually bristle. Confusion, the sense of shame, and modesty rudely insulted lead to flushing of the skin over the face, the neck and, in very sensitive women, over the upper two-thirds of the chest. This indicates the close nexus between the psychical centres and the vaso-motor mechanism of the cutaneous capillaries. The psychic functions of the skin are of practical importance, for emotion plays a part in the aggravation if not in the actual causation of some skin lesions.

SURFACE MARKINGS OF THE SKIN

A naked-eye examination shows that the surface of the skin is divided up by innumerable fine lines and by many coarse furrows. The furrows are large and small. The large ones are chiefly met with over the flexor aspect of joints; the small ones over the extensor aspect. They are due to movement, and the attachment of the skin to underlying structures.

The wrinkles and lines upon the face are the permanent marks of transient but repeated emotions. There are numerous small muscle fibres attached to the skin of the face, and their contraction under the stimulus of the corresponding emotion produces a frown or a smile. The lines graven upon the face by illness, age, or progressive emaciation depend upon a wasting or shrinking of the subcutaneous tissues; and the skin, being now too large for what it has to cover, and having lost some of its elasticity, tends to fall into folds.

Papillary Ridges and Furrows.—In addition to the coarser lines upon the skin there are many finer ridges and hollows best seen upon the palms and soles. A lens reveals them best. They are due to the fact that the papillæ, which, as we have seen, are projections upward into the epidermis, are best developed in these regions, and are arranged in lines. On the palmar aspect of the fingers and the plantar

surface of the toes they are very well marked, and form whorls. The individual peculiarity of their arrangement on the fingers has been made a means for the identification of criminals.

If we examine these papillary ridges with a lens we may detect upon them the minute orifices of the sweat glands. The sebaceous glands open through the hair follicles.

TERMINOLOGY OF SKIN LESIONS

For purposes of classification lesions of the skin are subdivided into primary and secondary lesions. The division is somewhat arbitrary, and is not clear-cut, for the same type of lesion may be a primary or secondary manifestation.

THE Primary Lesions are—

1. **The Macule** :—A small or large circumscribed alteration in the colour of the skin, without any change in the consistence of the skin or disturbance of its surface. There is neither infiltration, atrophy, nor elevation above the surface of the normal skin. Indeed, a macule is analogous to a fruit stain on a white table-cloth. Macules arise from several causes—

- (a) From a local overfilling of blood-vessels, *e.g.* roseola, erythema ;
- (b) From dilatation of superficial capillaries, *e.g.* telangiectases ;
- (c) From the escape of blood from the vessels, *e.g.* ecchymoses, petechiæ ;
- (d) From a local depigmentation of the skin, *e.g.* leucodermia, or from a local hyperpigmentation, *e.g.* freckles.

2. **The Papule** is a circumscribed solid lesion elevated above the surface of the skin. It is neither large, deep-seated, nor completely spherical. Unlike the macule it is palpable, and may be acuminate, flat or obtuse. It is produced by exudation, or through proliferation of some of the constituent cells of the skin. It disappears without leaving a scar, and is met with typically in such diseases as *Lichen* and *Prurigo*.

3. **The Nodule** or **Tubercle** is a large papule, more deeply set in the skin than an ordinary nodule. It projects above the surface as a rounded mass, and is due to a new growth of cells. It leaves a cicatrix, and is met with typically in *lupus vulgaris*, *tertiary syphilis* and *leprosy*.

4. **The Wheal** is an acute transient superficial œdematous elevation of the epidermis, usually in the form of a line or streak, which itches intensely and sometimes burns. It is due to a local and limited œdema of the corium, and is generally caused by some temporary injury of the vascular endothelium by some circulating toxin. It

arises suddenly, and disappears suddenly, leaving no scar, and is met with typically in *Urticaria*.

5. **The Vesicle** is a tiny blister, sometimes acuminate, sometimes rounded, situated in or under the epidermis and containing serous fluid. It usually disappears without leaving a scar, and is met with typically in the vesicular stage of eczema.

6. **The Pustule** is a vesicle in which the serous fluid has been converted into pus by micro-organismal infection. Large vesicles and pustules are called *Bullæ*.

7. **The Scale or Squama** may be either a primary or a secondary lesion. It is a partially separated flake of horny cells, *e.g.* as in *Ichthyosis* and *Psoriasis*. Scales may be small, superficial, branny exfoliations or large, leaf-like separations of the horny layer.

THE SECONDARY LESIONS

1. **The Crust** is an aggregation of dried serum, blood, or pus on the surface of the skin. Crusts may be honey-coloured (dried serum), yellowish-green (dried pus), or reddish-black (dried blood).

2. **The Ulcer** is a deep excoriation in which there is a local destruction of the whole thickness of the epidermis and part or the whole thickness of the corium.

3. **The Scar** is a fibrous tissue replacement of skin substance destroyed by injury or disease. It differs in colour and density from normal skin, and may follow not only a wound or an ulcer but an intradermic destruction of elastic tissue.

4. **Fissures or Rhagades** are splits in the horny and epidermic layers so that the dermis is exposed.

A large number of secondary lesions are produced by scratching. They may consist of excoriations or erosions, *i.e.* local and usually linear losses of the horny layer of the skin, or punctiform hæmorrhages, or if the scratching has been long continued there may be pigmentation of the skin, with a protective thickening of the epidermis, and infiltration of the true skin, called by the French lichenification. Patches of lichenification are not uncommon on the neck, forearms and popliteal spaces. They are usually lozenge-shaped, and on a close examination their surface, which is more deeply pigmented than the normal skin, is seen to be divided up into tiny quadrilateral or angular areas by an exaggeration of the normal skin furrows. Such a patch bears a somewhat suggestive resemblance to an agmination of close-set lichen papules.

CHAPTER II

THE EXAMINATION AND TREATMENT OF SKIN AFFECTIONS

Clinical Examination.—The part to be examined should be fully exposed to evenly diffused daylight. The ideal is to examine the whole integument, but this is rarely carried out, and in hospital out-patient practice, except in unusual or very rare skin conditions, it is practically impossible through lack of time. Fortunately, in most cases it is unnecessary—but one should make a point of seeing the whole of the eruption in all but the simplest cases.

Frequently, as in the case of a simple psoriasis or a well-marked lichen, a diagnosis can be made from the first part of the skin exposed by the patient. This should be examined carefully, and if it presents any unusual features the examination may be extended to other parts of the skin.

It is hardly necessary to say that as artificial light modifies the hue of lesions it should be avoided whenever possible. In making an examination much time may be saved if a definite system is followed.

One should use one's eyes first, and one's fingers afterwards. If the patient is completely undressed one's sight reveals the **distribution** of the lesions: *e.g.* general or local; most marked on flexor or extensor aspect of the limbs; symmetrical or asymmetrical, etc.

Further, sight reveals the **type** of the lesions. One must note carefully whether all the lesions are of one type, or whether they are multiform, and if they are multiform whether one type of lesion preponderates. It is always important to discover the initial lesion. A careful study of the varying types of lesion will often throw a valuable light on the life-history of the disease: *e.g.* in lichen planus in which, in a case of old standing, there may be seen fresh lesions in active evolution, lesions which have begun to recede, and pigment stains left by lesions that have subsided. The scratch marks visible will tell, further, that lichen planus is attended by itching.

Sight also reveals the **elements of the skin involved**, *e.g.* the follicles, or the sweat-pores.

Sight also informs us of the **colour** of the lesions.

Touch plays a secondary part to sight in the diagnosis of skin

diseases, but it gives us information which we cannot derive from sight alone. It enables us to judge more accurately whether the lesions are in the superficial or deeper layers of the skin. It tells us if they are more palpable than visible, whether they are smooth or rough, of a higher temperature than the adjacent skin, and whether they are accompanied by much or little infiltration. A word may be said as to two special methods of examining a skin lesion.

(a) **Grattage**—which consists in the systematic scraping with a moderately sharp curette of the surface of a lesion to remove it layer by layer. This method is of great diagnostic value in psoriasis.

(b) **Diascopy**—or the viewing of a lesion through a firmly applied piece of glass. The pressure of the glass drives the blood from the superficial vessels, and the lesion is seen uncomplicated by hyperæmia. This method is of special value in Lupus, as it reveals the characteristic colour of the nodules.

When we have accumulated all the evidence we can from sight and touch we may proceed to listen to the patient's history. The chief points to inquire into are the history of the attack ; the length of its duration ; the family history with regard to the affection, for some diseases, *e.g.* psoriasis have a markedly familial incidence ; whether any other member of the family is suffering from a similar complaint—knowledge useful in scabies and ringworm of the scalp among children—and whether the patient has ever suffered from the disease before. Further, we should inquire as to subjective symptoms, such as itching, burning, formication, and pain.

In the investigation of a disease of the skin our sense of smell is of subsidiary importance ; but it may lend us valuable aid, and one may diagnose pediculosis capitis by smell ; while the mousey smell of favus and the odour of bromidrosis are characteristic.

GENERAL PRINCIPLES OF DERMATOLOGICAL THERAPEUTICS

It cannot be emphasised too strongly that the same general principles should be observed in the treatment of skin diseases as are followed in the treatment of other diseases. An acutely inflamed skin, like an acutely inflamed eye or joint, requires rest and protection from external or internal irritations of all kinds. Acute skin conditions require soothing treatment ; while chronic ones often derive benefit from stimulating treatment.

Unfortunately, in the present state of our knowledge, a great deal of treatment in dermatology is symptomatic, but this is also true of the treatment of any class of disease. The following simple rules may be of use :—

1. If the lesions of the disease are hidden beneath an accumulation of crusts or scales, begin by removing them. Crusts may be removed

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with starch and boric poultices, scales by thin ointments containing salicylic acid, or by washing with soap and water.

2. Do not treat an oozing skin surface with an ointment ; serum does not mix readily with grease. Treat oozing or moist surfaces with lotions or powders.

3. Do not apply an ointment to an acutely inflamed skin, the surface temperature of which is higher than that of the adjacent normal skin. Grease interferes with the radiation of heat. For an inflamed hot skin evaporating lotions, or watery lotions applied frequently, or starch and boric poultices applied cold and changed frequently, or dusting powders make the best applications.

4. In suppurative skin conditions do not aim at destroying all the organisms *in situ* by the use of strong antiseptics. Leave something to nature ; and do not interfere with her functions by damaging the body tissues in an endeavour to kill micro-organisms. A pyogenic dermatitis which has resisted strong antiseptic applications will often yield to an application of Calamine lotion and precipitated sulphur (grs. ij. in an ounce).

5. Soothe acute conditions ; stimulate chronic ones mildly

6. Except in chronic conditions always use mild remedies to begin with, and increase their strength if need be.

7. Never change a remedy which is suiting your patient, for the mere sake of change.

8. Master the therapeutic action of a few remedies ; have a clear view of what you are aiming at in each case, and act accordingly. Success in the treatment of diseases of the skin does not come from the multiplicity of remedies one employs, but from the careful and judicious application of a few whose capabilities and limitations one knows.

9. As Opie his colours, mix your remedies with brains.

The above rules will prove useful guides to the beginner. They are not like the edicts of the Medes and Persians. Some of them may, on occasion, be broken without disaster, but the practitioner who observes them carefully will find them trustworthy.

In the treatment of skin diseases success depends as much on the manner in which a remedy is applied as upon its therapeutic properties.

THE FOLLOWING ARE THE CHIEF METHODS OF APPLICATION :—

I. By **baths**.—This is a very ancient form of treatment. In a bath all kinds of soluble remedies may be brought into contact with extensive surfaces of the skin for longer or shorter periods : *e.g.* soda baths in pruritus ; sulphur baths for scabies ; tar baths of weak concentration as sedatives ; bran or starch baths as emollients. For

prolonged immersion the temperature of the bath should be kept at 102° – 104° F.

2. By **lotions**.—Lotions are of two kinds, viz. those in which the medicament is in solution, and those in which it is in suspension. Lotions may be applied as compresses, covered with oiled silk ; or without an impervious covering, in which case it is necessary, because of evaporation, to remoisten the dressing from time to time. Or lotions may be dabbed on and allowed to dry, when any solids they hold in suspension are left upon the surface of the skin in the form of powder. Lotions may be evaporating and cooling, in virtue of any alcohol they contain, or antiseptic, *e.g.* boric, carbolic and mercurial lotions ; or astringent, *e.g.* weak silver nitrate lotions ; or sedative, *e.g.* weak tar lotions, calamine lotion, etc.

Two practical points should be emphasised : the prolonged application of watery solutions to the skin may lead to softening and maceration of the epidermis ; and, further, as a watery lotion evaporates the concentration of the medicament held in the dressing may be greatly increased. The former drawback is obviated by care ; the latter by using only weak lotions, so that any likely increase in concentration will not damage the skin.

3. By **powders**.—These consist of active or inert substances reduced by crushing or other means into very fine particles.

Vegetable or mineral powders, or mixtures of both may be used. The chief vegetable powders are starch and lycopodium powder. They are more soothing than mineral powders, but have the disadvantage of fermenting in moist, warm situations, and may then irritate the skin.

The chief mineral powders used are zinc oxide, talc, calamine, insoluble salts of bismuth, kaolin, and various infusorial or fossil earths. Powders may be sprinkled directly upon the skin, or the skin may first be smeared with some thin and indifferent ointment, and the powder then dredged on. The greasy layer ensures its attachment.

On a dry surface a powder acts as a protective, sedative, and abstractor of heat. Each particle of the powder acts as a many-surfaced radiator from which heat abstracted from the skin is diffused, and in this way the skin is cooled. If applied to a moist surface mineral powders drain the discharge away, but sometimes if the discharge is of a gummy nature it may combine with the powder and form hard and irritating particles like cement. This must be watched for and guarded against.

Various antiseptics, *e.g.* boric acid and salicylic acid, or sedatives *e.g.* camphor, may be added to a powder to meet some special indication.

4. By **greasy applications**—which are of three kinds : (a) *oils*, (b) *ointments*, (c) *pastes*.

(a) **Oils**.—Bland oils such as olive oil or oil of sweet almonds are of use for the removal of crusts, and the softening of dry skins. With them may be incorporated various remedial agents.

(b) **Ointments** are non-liquid preparations of some fatty substance, *e.g.* lard, vaseline, lanolin, etc., and one or more remedial agents. The amount of excipient in an ointment always exceeds the amount of medicament it carries. Ointments are of use for softening and lubricating the skin, for protection, or as convenient vehicles for the application of drugs.

As a rule they are not suitable for application to hot or oozing surfaces.

A **cream** is a thin ointment with which some water is often incorporated to make a **cold cream**. The gradual evaporation of the water exercises a cooling effect on the skin.

Unna gives the following formula for cold cream :—

℞ Adipis Benzoati ..	..	..	..	20 pts.
Lanolini ..	..	..	..	10 pts.
Aquæ ..	..	..	..	30 pts.

Creams are soothing applications and are usually well tolerated by irritable and inflamed skins.

(c) **Pastes** are ointments in which the amount of excipient and the amount of inert or relatively inert powder are equal in weight. A good example is zinc paste—

℞ Pulv. Zinci Oxidi.	
Pulv. Amyli, ṁṁ Ṣii.	
Paraffini Mollis vel Adipis Benzoati, Ṣss.	

To this may be added various active remedies, *e.g.* boric acid, salicylic acid, ichthyol, etc., in suitable proportions.

A paste is a thick, somewhat porous and therefore slightly permeable preparation which has marked protective powers combined with some absorptive capacity. Its action is superficial, and it occupies a place in the local therapeutics of the skin about midway between lotions and ointments. A paste does not cause the retention of heat to the same extent as an ointment. Having some absorptive capacity it may be applied to a moist surface, and if a small percentage of water be added, or if a paste be smeared upon lint wrung out of cold water, it makes a pleasant cooling application.

5. **Varnishes** made from alcoholic solutions of resins, or collodion or gutta-percha dissolved in chloroform used to be a popular form of application to the skin. They are, however, comparatively valueless, as any remedy incorporated in the varnish can exert only a superficial action upon the skin.

6. **Gelatine-glycerine preparations**, of which Unna's zinc-

gelatine is a type, are valuable. There are two varieties—the thin and the thick.

℞ Gelatini 30 pts.	℞ Gelatini 30 pts.
Glycerini 50 pts.	Glycerini 55 pts.
Zinci Oxidi 30 pts.	Zinci Oxidi 50 pts.
Aquæ Destillatæ 90 pts.	Aquæ Destillatæ 85 pts.
(Thin zinc gelatine.)	(Thick zinc gelatine.)

Both are solid at ordinary room temperature, and must be melted in a water bath before use. Medicated or not by the addition of ichthyol, resorcin, chrysarobin, etc., they may be painted on the skin with a soft brush in several layers, and before the application dries it may be dabbed with cotton-wool, which will adhere and form a firm, elastic, light and easily removed dressing. This application is protective and soothing, excluding the air and lessening the chance of scratching and secondary infections with pus organisms. Further, if incorporated with a bandage, zinc gelatine forms an excellent support in such conditions as varicose eczema.

7. **Plasters** make a simple cleanly form of dressing. Their action may be deeply penetrating, as in the case of strong salicylic plasters; but their use is limited to a few remedies, and, as they are non-porous, they may prove to be very irritating. They are of special use in non-irritable strictly localised skin lesions.

8. **Soaps**, either alkaline or super-fatted, are occasionally used as the medium for applying remedies to the skin. Their action is, however, difficult to control, and as their application is limited by the medicated soaps available there is little opportunity to modify formulæ for the individual case.

GENERAL TREATMENT

He who contents himself by treating a skin disease with local applications alone is a poor dermatologist and a worse physician. A healthy condition of the skin depends in large measure upon the healthy functioning of all the other organs of the body, therefore any aberration from the normal must be dealt with. Dyspepsia, constipation, menstrual irregularities, anæmia, albuminuria, glycosuria, etc., must, if present, be treated carefully, and in the light of what is known as to the relation between focal sepsis and skin diseases all sources of septic infection in the teeth and tonsils must be dealt with radically. But a word of caution must be entered. More than one sound tooth has been sacrificed vicariously on the altar of focal sepsis, and I have seen one unfortunate patient who had all his teeth removed in a vain attempt to cure a skin condition that was due entirely to an external cause.

The following hints as to general treatment may be of service. An inflamed skin must be rested—and protected against all irritations from without or within. Many an acute skin disease is prevented from drifting into a chronic and intractable condition, if treatment is begun by a week in bed. The bed-clothes should be light, but of sufficient warmth, and smooth sheets should always be used. The patient should wear non-irritating garments of cotton or silk, for woollen or flannel fabrics irritate the skin, and are difficult to cleanse if they become soiled with ointment. For ambulatory treatment the same rule holds good: the underclothing next the skin should be of cotton or silk, and, if need be, flannel garments may be worn over it.

Diet should be light, wholesome and nutritious, and such as the patient can digest readily. Made-up dishes, highly seasoned dishes, pickles, excessive condiments and decomposing foods such as high cheese or game must be avoided. In conditions of seborrhœa an excess of fatty foods is to be avoided. Sugar may be given in moderation, as an article of diet, not as a luxury in the form of sweets. Bacon is best forbidden. Alcohol of all kinds is better avoided, as is also coffee, which stimulates the nerve-endings in the skin. Weak, freshly infused tea may be allowed. But the best beverage in all skin conditions is water, which should be taken after meals.

In most skin conditions a mixed diet is permissible, without excess either of carbohydrates, fats, or proteids. Vegetables and fruit—provided it is not too acid—may always be allowed. In all cases a regular daily action of the bowels should be secured.

Cleaning and Washing.—The question of washing the skin is important. In some cases, *e.g.* psoriasis, frequent warm baths with the use of an alkaline soap to soften and remove the scales are indicated. Water alone does few skin conditions any harm; it is the soap and friction with which it is applied that act as irritants. In acutely inflamed skins, however, it is, perhaps, better to use water sparingly. Olive oil makes a very satisfactory and emollient cleansing agent. Some eczemas are made worse by water, but even a weeping eczema is sometimes benefited by local washing with warm water, or, what is better, with warm normal saline.

INTERNAL REMEDIES

Of internal remedies which act upon the skin the following are the most important.

Antimony, in the form of antimonial wine, is often of use in acute rapidly evolving eruptions. It is also of use in the treatment of syphilis and yaws.

Arsenic has long had a great vogue in the treatment of skin diseases. It is best administered either as *Liquor Arsenicalis* or in the form of

Donovan's solution. It is valuable in all cases in which there is defective nutrition of the skin: in neuro-trophic dermatoses, and in conditions in which there is some dyskeratosis, *e.g.* psoriasis. It is of use in chronic eczema, lichen ruber planus, chronic pemphigus, and in large doses it has sometimes produced improvement in Mycosis fungoides. It may even be administered, with caution, in an acute weeping eczema.

Its administration for a prolonged period has some unpleasant bye-effects. It may set up herpes, or produce pigmentation of the skin, or a warty condition on the palms and soles.

Calcium administered as the lactate or chloride is of use in such conditions as chilblains, in which there is a diminution in the coagulability of the blood. It is also of use in urticaria, and to prevent the appearance of serum rashes.

Sulphur, in its colloidal form, improves the nutrition of the nails, and promotes the production of normal horn cells. It is, therefore, of use in psoriasis.

Mercury is a specific in syphilis. It is also of use in many inflammatory diseases of the skin, and will sometimes bring a severe attack of lichen planus under control.

Tin, in the form of the oxide—procurable in tablet form under the trade name *Stannoxyd*—is of value in all suppurative conditions of the skin. The average dosage is 12–16 grains daily.

Of the **endocrinous glands** the most valuable in the therapeutics of the skin is the **thyroid**. Thyroid substance promotes metabolism. It is useful in psoriasis, chronic eczema, ichthyosis, lupus, and sometimes sclerodermia.

Parathyroid substance is useful for mobilising the available calcium in the blood. It is useful in chilblains, urticaria, and varicose ulcers.

Suprarenalin injected subcutaneously is useful in urticaria

Ovarian substance is useful in senile pruritus, and in hirsuties of the face in women.

Orchitic extract is useful in senile pruritus in the male.

Polyglandular preparations have, generally, a stimulating effect on hair-growth, and are therefore of use in alopecia.

Treatment by **autogenous blood serum** (AUTOSEROTHERAPY) or by whole blood (AUTOHEMOTHERAPY) has of recent years been advocated in some quarters. Five cubic centimetres of blood are withdrawn under aseptic conditions from the patient's vein, and the serum or whole blood is injected subcutaneously. The operation is repeated once or twice a week, and gives relief in certain pruriginous and toxic dermatoses. This method of treatment has been carefully tested in my clinic. The results are uncertain. Sometimes great

benefit results; sometimes the method fails to produce any improvement.

Intestinal Disinfectants.—Since bowel toxæmia has been generally recognised as a potent factor in producing skin affections, intestinal disinfectants have come into larger use. The best are sulpho-carbolate of soda, salol, kerol, and a benzine derivative known as dimol, which passes through the bowel unchanged, is not absorbed, but has a powerful anti-microbic action.

Vaccines, whether autogenous or not, are often of use in suppurative conditions of the skin. They act best in such diseases as furunculosis, in which the blood stream has a free access to the site of suppuration. They are least useful in conditions like folliculitis, where the access of the blood is limited. Detoxicated vaccines have not given me recognisably better results than ordinary vaccines. Danysz has claimed remarkable results in chronic dermatoses, *e.g.* psoriasis, from the administration of vaccines made from the intestinal flora. The method, which is still *sub judice*, has frequently, but not invariably, given good results in other hands.

LOCAL REMEDIES

When we apply a remedy locally we should have some knowledge of what it is likely to do. The following notes as to some of the agents in commonest use may be of value.

1. **Carbolic Acid.**—It may be applied as a lotion, a paint, or in an ointment. It has marked antipruritic powers; in aqueous solution is strongly antiseptic, and in concentrated form is stimulating and caustic. Crystals of carbolic acid rubbed up with crystals of chloral or camphor form a solution which may be used as a paint in lupus, or in alopecia areata. Carbolic acid is readily absorbed by the skin, so it must not be applied to large surfaces.

2. **Chrysarobin** has strong reducing powers. It extracts oxygen from the tissues, and is of special use in all chronic inflammatory conditions of the skin with marked over-production of horn cells. It is, practically, a specific in psoriasis. It may be used as a stimulant in alopecia areata. It is used in ointment or paste form, in plasters, or combined with collodion or guttapercha, or dissolved in chloroform as a varnish. It has certain disadvantages. It may set up a violent dermatitis; it is extremely irritating to the eyes, and must not be used near them; occasionally, though rarely, it may produce symptoms of toxæmia, and it stains the hair and the nails a deep brown colour, and, after washing, any linen or clothing soiled by it is dyed indelibly a deep violet colour. It should never be used in an acute psoriasis—with rapidly evolving lesions which feel hot to the touch.

3. **Ichthyol** stimulates the production of normal horn cells, has

remarkable powers of controlling inflammation, is mildly antipruritic and antiparasitic. In erysipelas it often acts like a specific. It is useful in all acute and chronic inflammations of the skin. It may be applied in ointments or pastes (1-10 per cent.), or in watery solution in compresses, or as a paint or varnish mixed with an equal quantity of water, or rubbed up with equal parts of ether and alcohol.

4. **Lead** in lotion or ointment form is astringent, antipruritic, and soothing. As the lactate of lead (1 part of *Liquor Plumbi Subacetatis* in 10 of milk) it forms an excellent application in acute eczema, especially about the face in children. In chronic eczema the *Unguentum Glycerini Plumbi Subacetatis* combined with an equal quantity of *Unguentum Acidi Salicylici* promotes the healing of fissures, and softens and removes areas of hyperkeratosis.

5. **Salts of Mercury** in aqueous or spirituous solution are antiseptic, antipruritic and, in strong concentration, caustic. By producing desquamation they may aid in the removal of abnormal pigmentation. In ointments or pastes they are antiphlogistic, antipruritic, and promote the absorption of chronic exudates. They are stimulating and caustic in strong concentration, and have a very wide application in the treatment of skin diseases. The preparations most often used besides *Unguentum Hydrargyri* are white precipitate (*Hydrargyrum Ammoniatum*), useful in impetigo and other purulent skin affections, and in all parasitic diseases of the skin, as well as in eczema and psoriasis (especially on the scalp): *perchloride of mercury* in aqueous solution, useful as an antipruritic, especially in pruritus ani; and as an antiseptic and antiparasitic: *Unguentum Hydrargyri Nitratis Dilutum*, of great value in chronic eczema and psoriasis as a stimulant and promoter of absorption, and in sufficiently weak dilution— $\frac{1}{3}$ i. of the dilute ointment in $\frac{1}{3}$ i. of soft paraffin—in acute inflammatory skin diseases; and combined with salicylic acid ointment, in lupus. All preparations of mercury in ointment form are useful in the secondary and tertiary lesions of syphilis.

In the form of the *Liquor Hydrargyri Nitratis Acidus* mercury is of great value as a caustic, and is used in the treatment of lupus, warts, etc.

6. **Pyrogallic acid** used in ointment or paste form is, in weak concentration of 1-2 per cent., an anti-inflammatory and antipruritic agent. It causes contraction of superficial blood-vessels, dries up moist surfaces and stimulates the production of normal horn cells. It is of special value in psoriasis, lupus erythematosus, and some varieties of weeping eczema unattended by much œdema. In stronger concentrations it is a powerful reducing agent and caustic, removing horn cells, and with a special predilection for tubercular tissue. It stains the hair, nails, and skin a dark brown colour, and if used over extensive surfaces may produce toxic symptoms.

7. **Resorcin**, in weak concentrations either as a 1-4 per cent. aqueous solution or as a paste, has astringent and keratoplastic properties. It is of special use in solution for applying to a moist eczema. As an ointment it is of value in subacute or chronic eczema. In strong concentrations (10-20 per cent.) it is a powerful reducing agent and caustic. It is often used in paste form for producing desquamation in Acne. It is incompatible with caustic alkalis.

8. **Salicylic acid** may be used in a lotion, ointment, paste, powder, plaster or soap. It is very insoluble in cold water, but dissolves readily in alcohol. In weak concentrations (1-2 per cent.) it stimulates the production of normal horn cells, and is of use in mildly weeping eczema, erosions, fissures, etc. In stronger concentrations it digests and removes pathological horn cells, and is of great use in the treatment of psoriasis and all forms of hyperkeratosis.

9. **Silver nitrate** in weak concentration is an astringent and coagulator of albumen. In strong concentration it is a stimulant and caustic; in the form of *Argenti Nitras Mitigatus* (i.e. silver nitrate 1, potassium nitrate 2) it is largely used for caustic purposes. As an aqueous $\frac{1}{4}$ - $\frac{1}{2}$ per cent. solution it is valuable in weeping eczema, and in 5-10 per cent. solution in spirits of nitrous ether it relieves the itching in a patch of chronic eczema and melts the infiltration down. Colloidal silver (1-1000) is a powerful antiseptic, antipruritic and non-irritating astringent.

10. **Sulphur** is antiseptic, antiparasitic, in weak concentrations keratoplastic, and in strong concentrations keratolytic. It has a remarkable power in lessening the secretion of the sebaceous glands, especially if applied in the form of a colloidal suspension. If used for too long a period or in too strong concentration, it acts as a powerful irritant, drying the skin and provoking an erythema with desquamation.

11. **Tar** is an extremely valuable remedy in dermatology. Derivatives of coal-tar and wood-tar are employed in the form of alcoholic solutions, natural oils, e.g. oleum rusci, oleum fagi and oleum cadinum, or in ointment and paste forms. Tar is a strong reducing agent. It stimulates the production of normal horn cells, is astringent, and in weak concentrations promotes the absorption of mild inflammatory infiltrations, and in stronger concentrations helps in the dissolution of chronic inflammatory infiltrations. It has strong antipruritic powers; but even in low percentage strengths it may set up a violent inflammation of the skin, with blistering. There is practically no skin disease in which tar in some form is not of use; but if used injudiciously and too extensively it may produce toxic symptoms with vomiting, diarrhœa, and green discoloration of the urine, with albuminuria.

PHYSICAL THERAPEUTIC AGENTS

1. **X-rays.**—The application of X-rays to the treatment of skin diseases has been an invaluable addition to our armoury. The rays must, however, be applied with care, and with a due appreciation of the serious effects they may produce if applied unwisely or carelessly. In proper dosage they temporarily inhibit the activity of the hair papillae—so they may be used to cause falling of the hair in ringworm of the scalp and sycosis. They cause glandular tissue to atrophy—so they may be used in acne, or other conditions associated with over-activity of the glands of the skin. They have strong anti-pruritic powers, and will give relief from an intractable pruritus ani. They promote absorption of infiltrations, and are therefore valuable in subacute and chronic eczema, especially the hyperkeratotic variety seen on the soles and palms. In some cases of circumscribed psoriasis, lichen planus or chronic lichenification they cause the lesions to disappear. They stimulate the healing of ulcers, and thin down thickened patches of tubercular tissue. They stimulate rodent ulcers to heal and are of use in lessening the discharge, diminishing the pain and helping to retard the progress of malignant disease. A powerful remedy, their application should only be entrusted to the experienced, and, as Whitfield has suggested, a patient who has been treated with X-rays should, at the end of his treatment be supplied with a card giving details as to the dosage he has received. This precaution may prevent disaster should he pass into the hands of another practitioner, and be recommended for further X-ray treatment. For the effect of X-rays is cumulative, and a skin already exposed becomes more and more vulnerable.

2. **Radium**, in such quantities as are available in this country, is of use in the treatment of rodent ulcer and small epitheliomata. It acts extremely well upon rodent ulcers on the eyelids.

3. **Ultra-Violet Rays.**—Treatment by ultra-violet rays has recently become very popular. It is not a cure-all. Even in dermatological conditions, easily accessible to the rays, there are many failures. The ultra-violet rays are excellent stimulants for use in conditions like alopecia areata. They often give good results in cases of acne vulgaris, acne rosacea, lupus erythematosus, pruritus, chronic eczema and ulcers, especially of the indolent varicose type. The rays give great relief to the pain of herpes zoster. They are sometimes helpful in cases of seborrhœic dermatitis, and some cases of psoriasis react very favourably. An extensive attack of molluscum contagiosum may be cleared up by a few applications. The rays are very useful in the treatment of chilblains. They are of great use in the treatment of lupus vulgaris—whether applied locally or in the form of generalised light baths. They give good results when applied to some of the

tuberculides. Their action may be intensified by sensitising the skin by the application of certain "photo-dynamic substances" such as eosin and erythrosin: while the presence of hæmato-porphyrin in the blood makes the skin particularly vulnerable to these rays.

The mercury-vapour lamp—air-cooled for local or general irradiation, and the water-cooled mercury-vapour lamp (Kromayer type) for local irradiation, are the two varieties of lamp in commonest use. In addition there is the carbon arc lamp—much used for general light baths in cases of lupus vulgaris. Carbon electrodes impregnated with tungsten give a light particularly rich in ultra-violet rays, but, as Sequiera has shown, the penetrative power of the actinic rays from the tungsten arc is not great.

In applying ultra-violet rays the sensitiveness of the patient should first be ascertained by a preliminary exposure of several small areas of skin for differing periods. The "time dose," and the distance from the centre of the arc must be noted for each area exposed. The exposed areas must be examined within twenty-four hours of the irradiation. The amount of erythema should be noted. There are three recognised degrees: (*a*) mild, which disappears within three days; (*b*) severe, which persists for more than three days, and which is followed by severe desquamation, and (*c*) actual blistering. Repeated doses sufficient to produce the first degree of erythema is often all that is required to yield good results in many dermatological conditions. A severe erythema may be necessary to promote recovery in a chronic dermatosis—but it is never necessary, except in cases of naevus or lupus, when a water-cooled lamp is being used, to produce actual blistering. Some degree of tolerance is soon established to the rays, so the dose must be progressively increased. A somewhat rough-and-ready rule, which acts well in practice, is to lessen the distance between the lamp and the patient by two inches at each subsequent exposure. The first exposure—unless one is using a Kromayer water-cooled lamp—should be at a distance of three feet. When, in successive exposures the distance has been reduced to two feet, the next dose given should be at the original distance of three feet: but it should be made proportionally longer in duration to give the reaction aimed at. The time should be determined experimentally. "Dosimeters" of various kinds are on the market: but the best test is the susceptibility of the individual patient, which can only be discovered by careful observation (*cf.* p. 65).

4. **Ionisation** with metallic radicals, *e.g.* of zinc or copper salts, is of great use in the treatment of lupus vulgaris (*q.v.*, p. 66), syçosis and other suppurative conditions of the skin.

5. **Refrigeration** with carbon dioxide snow. This is a method of treatment of great use in dealing with nævi, warts, moles, patches of

lupus erythematosus, lupus vulgaris and superficial rodent ulcer. The snow, which has a temperature of -79° C., is formed as the gas (stored under high pressure) escapes from the cylinder. It is caught in a rolled-up towel or special receptacle, and then moulded by firm pressure, in special moulds, into a pencil or crayon suitable for the work in hand; or the "snow" may be mixed in a saucer with ether or acetone to the consistency of slush, and painted on the part to be treated.

The length of time of an application varies according to the purpose for which it is applied. The pressure of the application should vary in the same way. If deep destruction is required, *e.g.* in the case of lupus or rodent ulcer, an application of from 1-2 minutes is indicated. For a cavernous nævus an application of $1-1\frac{1}{2}$ minutes with firm pressure so as to produce deep refrigeration will usually be enough, while 20-40 seconds is usually a sufficient length of time to apply "snow" in lupus erythematosus. The freezing is not very painful, but the thawing out, especially if tissues over cartilage have been treated, may be acutely distressing. A large blister forms, which should be dressed with a mild ointment. When the blister separates the raw surface exposed should be dressed with the mild ointment till healing occurs. A second or third application of snow may require to be made. In my experience the application of the snow in solid pencils has yielded better results than the acetone- or ether-snow mixture. The treatment leaves a soft, whitish and pliable scar.

CHAPTER III

MICROBIC DISEASES OF THE SKIN. DISEASES OF THE SKIN DUE TO INFECTION WITH PUS COCCI

THE skin being the external organ of the body, in constant touch with the outer world, is the habitat of a large variety of cocci and other micro-organisms. As a rule, on a normal skin, these microbes lead a quiet saprophytic existence, but they may, on occasion, light up acute disease which may end in death. The number of organisms found upon the skin varies with the habits of the individual—a clean person who has frequent baths offering a less favourable nidus than one who is a stranger to soap and water. But no amount of personal cleanliness, no disinfection of the skin, however thorough, can rid the skin completely of its microbes.

Certain regions of the integument offer more favourable conditions for micro-organismal growth than others. Warmth, moisture, and a certain degree of mechanical protection aid their development, and so we find them most plentifully in such regions as the groins, the axillæ, beneath the breasts in stout women, on hairy parts of the body, between the fingers and toes, in the neighbourhood of the natural orifices of the body, in the mouths of the sebaceous and sweat glands, and under the free margin of the nails. Sabouraud has pointed out an interesting fact, viz. that in the neighbourhood of any pathological change in the skin there is a mobilisation of its ordinary micro-organismal flora.

Most of the microbes found on the skin are cocci, and of these by far the greater number are staphylococci (*staph. albus*, *aureus* and *citreus*), with occasional and not very numerous streptococci (*streptococcus pyogenes*, *strep. anginosus*, *strep. fecalis*).

On the normal skin these organisms may live indefinitely, and give rise to no symptoms, but any lesion in the continuity of the horny layer of the epidermis occasioned by a wound, however trivial, offers them a breach in the first line of the bodily defences, through which they find their way and at once begin to produce pathological changes. It is significant that W. N. Goldschmidt, who has made a special study of the staphylococci found in acne vulgaris, met with no coccus in any type of acne lesion which was not to be found in equal or in greater numbers on the normal skin.

Two factors determine the consequences of a break through the horny layer by a pyogenic micro-organism. They are (1) the virulence of the microbe, and (2) the susceptibility of the individual, which may be influenced by such conditions as youth, age, exhaustion, or by such intercurrent affections as albuminuria, glycosuria, etc.

DISEASES OF THE SKIN DUE TO STREPTOCOCCI

Impetigo contagiosa

Definition.—Impetigo contagiosa is a contagious pustular disease of the skin, due to a local and superficial inoculation with streptococci. It is characterised by the development on a reddish or lilac-coloured base of bullæ or vesicles filled with serum. The bullæ or vesicles are easily ruptured, and the gummy serum they contain dries to form amber or honey-coloured slightly adherent crusts beneath which restitution of the epidermis gradually occurs.

Etiology.—The causal organism is a streptococcus—most often the streptococcus pyogenes or the streptococcus anginosus. During the war many cases were complicated by the presence of the streptococcus fæcalis. Pyogenic staphylococci are also found in the lesions, but their rôle is believed to be secondary.

Predisposing causes are (a) the age of the patient. Though it may occur at any age it is essentially a disease of childhood, affecting chiefly children under fifteen years of age. (b) Lack of cleanliness. Streptococci are not usually found upon the healthy clean skin. (c) Pediculi capitis. One should always be careful to examine the scalp of a child with impetigo of the face, for pediculi. The presence of pediculi causes the child to scratch its head; the scratching tears the epidermis, pustules develop, the finger-nails become infected, and convey the micro-organisms to the skin of the face. (d) Otorrhœa—or any other local focus of suppuration. Otorrhœa is very frequently followed by an impetiginous outbreak. (e) Exposure to contagion. Contagion may be direct, e.g. from one child to another, or from a child to a nurse by direct contact; or mediate—through towels, sponges, etc., used and contaminated by a sufferer. “Scrum-pox,” which is simply impetigo, probably owes its rapid spread through a school both to direct and mediate contagion.

Symptoms and Course.—The disease begins without prodromal symptoms, and usually runs its course without systemic disturbance and without any subjective symptom beyond a little itching. The initial lesion is an erythematous macule, so transient as almost always to escape notice. It occurs at and around the tiny portal through which the streptococcus has penetrated beneath the horny layer. Rapidly the transient erythema is succeeded by a flaccid vesicle or bulla, contain-

ing translucent serum which may or may not become purulent. This bulla is on a reddish or lilac-coloured base, which extends beyond the blister to form a narrow areola. The bulla grows with fair rapidity, and varies in size from a split pea to the circumference of a shilling. The bulla ruptures, the contents escape and dry into a gummy, slightly



FIG. 2.—Impetigo contagiosa.

adherent honey-coloured crust. In most cases, before the initial lesion has reached this stage, similar vesicles or bullæ have appeared near it, and rapidly pass through the same series of changes, so that by the time one first sees the patient, a considerable area of the face may be covered with lesions in various stages of development. The earlier lesions usually develop close to the initial lesion, but as the disease is auto-

inoculable the streptococci, transferred to other parts of the face, or to more remote regions, by the fingers, towels, etc., produce characteristic lesions there (Fig. 2, and Plate I, A).

If one removes the crusts within a day or two of their appearance, one finds beneath them a moist oozing base, rose-pink or red in colour, and not sunk below the level of the surrounding skin. On this base the exudate, if exposed to the air, rapidly dries to form another amber or honey-coloured crust. Some of the crusts remain thin and wafer-like; others heap themselves up in irregular masses of dirty yellowish or yellowish-brown dried pus. These cases are, I believe, those in which there is a considerable staphylococcic infection superadded.

Adjacent lesions may coalesce, so that various patterns are produced. When the active mischief has subsided the crusts cease to grow in size, and gradually dry and fall, leaving a reddish-brown macule behind which fades progressively. The lesions leave no scars. The nearest lymphatic glands are invariably affected and may suppurate.

The sites of election for impetigo are the face, the scalp, the hands (especially in children in whom one often sees an impetiginous sore at the edge of the nails); but it may occur on any part of the body. On the scalp impetigo is most often a complication of pediculosis, and is most frequently situated in or around the sub-occipital fossa. The characteristic development of the lesions is difficult to follow upon the scalp, and one usually sees only massed or isolated thick crusts, anchored by the hairs. Under the crusts there is sometimes a fetid suppuration in process which may occasion serious systemic disturbance; and if the pus organisms find their way into the hair follicles they may give rise to a suppurative folliculitis which may be followed by permanent local baldness. In favourable cases, without treatment, impetigo will sometimes undergo spontaneous cure in 12-14 days; the crusts drying up and falling. But in most cases there is such a tendency to reinoculation that, without careful treatment, the disease may run a prolonged course.

Impetigo circinata is a clinical variety of impetigo contagiosa, which differs from it slightly in appearance. It is due to the same micro-organism. The lesions, which may be single or multiple, are usually situated on the face, and consist of one or more rapidly spreading flaccid, thin-roofed circular bullæ, which rupture readily, and exude a little serum which dries rapidly to form a thin papyraceous central crust. Outside this central crust there is usually a narrow slightly moist zone, and beyond that again an everted upturned edge of cuticle. Adjacent circinate lesions may coalesce, so that gyrate forms are produced (Plate I, B).

Histo-pathology.—The clinical picture gives a clue to the microscopical findings. On section the roof of the bullæ is seen to consist of the whole thickness of the horny layer. As this differs in density in

PLATE I



IMPETIGO CONTAGIOSA (Circinate variety) (b)



IMPETIGO CONTAGIOSA (a)

different parts of the body the resistance of the bullæ to rupture varies with their situation. The floor of the bullæ consists of cells of the prickle-cell layer, from which the horny layer has been raised by a serous exudate which contains leucocytes, streptococci, and usually a few staphylococci. The mucous layer and the papillæ are permeated by wandering leucocytes. The lymph spaces and blood-vessels are dilated.

Diagnosis.—The brief history, the rapidity of the spread, the character of the lesions and their contagiousness all indicate a diagnosis of Impetigo contagiosa. But confusion may arise with all other crusted lesions of the skin.

A *crusted lupus* or a *crusted tertiary syphilide* will exhibit either marked infiltration or definite ulceration under the crusts.

A *crusted eczema* will, on the removal of the crusts, exhibit a weeping surface studded over with numerous cribriform oozing points, and in addition an examination of the whole clinical picture will reveal that polymorphism of lesions—scales, vesicles, papules—characteristic of eczema.

Varicella, in its early stages, may be momentarily confused with Impetigo, but its full evolution at once clears up all doubt.

Favus on the scalp may be confused with impetigo in the same region ; but the crusts of favus have a very definite contour, with an umbilicated centre ; they are dry, friable, and have been present usually for a long time. There is no moisture beneath them, and the characteristic fungus (*ACHORION SCHOENLEINII*) is easily seen on microscopical examination.

Prognosis.—This is always good, and the lesions leave no scars. But adjacent lymphatic glands may suppurate ; and Impetigo has, on occasion, been the precursor of an inoculation with the tubercle bacillus. It must not be forgotten that recurrences of Impetigo are common if treatment is suspended too soon.

Treatment.—This is simple. Some recommend the removal of the crusts with soap and water. To this I am opposed, as I am firmly persuaded that soap and water may spread the disease widely if used before the crusts are completely dried up. I always forbid the use of soap and water on the affected parts, and recommend the following procedure.

1. Promote the drying of the crusts by applying several times a day Calamine lotion containing grs. ii. of precipitated sulphur in each ounce, or by dabbing the parts with methylated spirit and dusting on a powder such as Xeroform or Dermatol.

2. After three days of desiccating treatment, during which restitution of the horny layer is proceeding under the crusts, apply starch and boric poultices (see Appendix), or apply a thick dressing of a weak mercurial ointment. Norman Walker holds, and rightly, as experience

proves, that grs. v. of Hydrarg. Ammon. in ʒi. of lard or vaseline is enough. The use of the ointment should be continued for a few days after the crusts have fallen.

If Impetigo affects the scalp, promote the desiccation of the crusts by frequent applications of Lotio Hydrarg. Perchloridi (1-2000) and afterwards remove the crusts with this ointment :

℞ Ung. Hydrarg. Nit. Dil., ʒi.
 Ung. Acidi Salicylici.
 Paraffini Mollis, āā p.e. ad ʒi
 M.

H. W. Barber is of opinion that in the well-established case local treatment is rarely enough, and that it is little more than palliative, the ultimate cure depending on the formation of anti-bodies. To aid this he recommends in suitable cases the injection of a mixed streptococcic and staphylococcic vaccine--autogenous if possible.

Subacute and Chronic Forms of Impetigo

As we have seen, Impetigo contagiosa is an acute disease, but, with or without an antecedent acute attack, we meet with sundry streptococcal infections of the skin of an impetiginous nature. For example, we see a chronic condition of impetiginous crusting at one or both nasal orifices, and on removing the crust we frequently find underneath it either a tiny crack or an associated folliculitis. Or at the external commissures of the lips we may find a chronic superficial crack, either covered entirely by a yellowish crust, or bordered above and below by a divided crust which may or may not be hinged like a bivalve at its outer edge. Or behind the ear we may find a **retro-auricular intertrigo**, or **streptococcal fissure** :—a crack penetrating to the true skin, and therefore easily made to bleed, bordered on each side by a bluish-red margin which fades gradually into the surrounding skin. On close examination it will be found that the horny layer on each side of the fissure is but slightly attached, as though it had formed the roof of an abortive bulla. Sometimes the fissure may be partially covered by a crust. As Sabouraud pointed out, the condition is due to a streptococcal infection, and it is undoubtedly closely related to Impetigo. A further chronic form of impetigo is the **scaly** or **furfuraceous** type, represented by localised patches on the cheeks, chin, or forehead of branny desquamation, sometimes showing a bead or two of dried exudate, often attributed to a misuse of soap and water or to ineffectual drying of the skin, but in reality now known to be due to a streptococcal infection.

The French used to call this condition **Dartre volante**, and the old English name for it was **Tetter**. All these varieties of subacute

or chronic (streptococcal) impetiginous infection are auto-inoculable, and may on occasion be the starting-point for an acute outbreak either upon the skin of the sufferer, or of some one infected by contact with him. The sufferer is an impetigo carrier. The condition, therefore, calls for treatment. In my experience the following line of procedure is adequate.

Treatment.—If there is a fissure paint it three times weekly with a 2 per cent. watery solution of silver nitrate and apply the following ointment night and morning : Ung. Hydrarg. Nit. Dil. $\mathfrak{z}\text{i}$. in $\mathfrak{z}\text{i}$. of soft paraffin. If the condition is one of branny dry scaliness I have found the following application invaluable :

R Ung. Hydrarg. Nit. Dil., $\mathfrak{z}\text{i}$.
 Ung. Acidi Salicylici.
 Glycerini Amyli, āā p.e. ad $\mathfrak{z}\text{i}$.
 M.

Sig. Apply night and morning.

Great confusion has been introduced into Dermatology by the multiplication of descriptive names for pathological conditions. For instance, the disease known as **Pemphigus epidemicus neonatorum**, or **Febris bullosa**, or **Infantile pemphigoid**, is not a pemphigus in the true sense, but is merely a form of Impetigo contagiosa. It sometimes appears in epidemic form in lying-in hospitals, or in the practice of a midwife, and is conveyed from infant to infant. Commencing usually in the early days of extra-uterine life, it is characterised by the appearance usually near the umbilicus or on the buttocks of several small bullæ, filled with clear fluid, which soon becomes pustular. The bullæ may occur anywhere on the skin, but they are rare on the face, and are practically never seen on the palms or soles. As the horny layer is thin, the bullæ rupture quickly, and sometimes quite large sheets of the horny layer may separate. Sometimes, especially if the infant is weakly, or if a systemic infection occurs, death may ensue ; but most children recover. Confusion may arise with congenital syphilis, but in the latter disease one almost always finds characteristic lesions on the palms and soles, and there are other symptoms present such as fissured lips, characteristic cry, and a positive Wassermann reaction.

Treatment.—The condition being highly contagious to infants, strict isolation is imperative. A nurse attending to a child suffering from this infection should have nothing to do with healthy infants. The local treatment is simple : clip the blisters, remove any loose undermined skin and apply this lotion night and morning :

R Sulphuris Precipitati, grs. ii.
 Lotio Calaminæ, $\mathfrak{z}\text{i}$.
 M.

In extensive cases antiseptic baths of Boracic acid or Eusol (1-8) may be employed before the lotion is applied. Care should be taken not to chill the skin unduly, lest pneumonia supervene.

DERMATITIS EXFOLIATIVA NEONATORUM : RITTER'S DISEASE OF INFANTS

This disease of infants, which is probably streptococcal in origin, begins during the first few weeks of life as an erysipelatous dermatitis round the mouth, often accompanied by the formation of bullæ. The disease spreads all over the body, the skin swelling and becoming dark red. The horny layer separates in large flakes. If bullæ are present they rupture and crusts form. About 50 per cent. die of the disease or some intercurrent affection. Treatment should be by means of antiseptic baths and the free use of dusting powders.

PERLËCHIE

This is a contagious disease affecting the mucous membrane of the lips and the adjacent skin usually of school-children. It is much commoner in France and Spain than in this country. It is due to a streptococcal infection (*Strep. plicatilis*), though Raymond believes it may also be caused by the *Staphylococcus cereus albus*. Beginning at both angles of the mouth simultaneously, in the form of tiny cracks, it spreads centripetally, the epithelium of the red edge of the lips blanching and assuming a somewhat sodden appearance. The mischief usually involves the adjacent skin and extends to the buccal surface of the labial mucosa. It must be carefully differentiated from syphilis, by a complete examination of the patient, and if need be, a blood test should be made.

Often running a very indolent course, even in the face of treatment, the disease may undergo spontaneous cure in two or three months. Relapses are common.

Treatment.—The local application of $\frac{1}{2}$ -1 per cent. aqueous solution of silver nitrate daily, or the use of collosol argentum (1-1000), followed if need be by a weak mercurial ointment as for impetigo, will usually effect a cure.

Ecthyma

As has already been stated, Impetigo contagiosa rarely leaves scars, because it is a superficial disease not attended by ulceration. Ecthyma is a streptococcal disease characterised by the formation of pustular vesicles or bullæ, which dry into crusts beneath which there is superficial ulceration.

Etiology.—The lesions are contagious and auto-inoculable and are caused by the *STREPTOCOCCUS PYOGENES*.

Contributory causes are any lowering of the general health, or any condition which lessens the local resistance of the skin. It was a very troublesome complication of scabies in the late war—the abrasions produced by scratching readily becoming infected with pyogenic organisms.

Symptoms.—The lesions may occur anywhere on the skin, but their commonest sites are the buttocks, thighs, and legs. Children are more

frequently affected than adults. Beginning as tiny bullæ, on an erythematous base, the lesions soon become crusted, and then appear as dirty, greyish-yellow or blackish-brown, thick masses of dried pustular exudate, set on a hard infiltrated and often painful base, and girt about by an inflamed zone. On removing the crusts, which are moderately adherent, one exposes a thin pellicle of yellowish-green pus, which covers an unhealthy-looking rounded or irregular ulcer—superficial, yet deep enough to have destroyed the whole thickness of the epidermis. Ecthymatous lesions are usually scattered, few in number and discrete.

Diagnosis.—*Impetigo* is distinguished from ecthyma by its greater superficiality, and by the absence of true ulceration below the crusts. The *crusted syphilide* is more infiltrated; there are usually other signs of syphilis present, and the Wassermann reaction is positive.

Prognosis.—This is good—though healing is slow, and may take from four to eight weeks. Scars of varying degree are left.

Treatment.—First discover, if possible, the underlying cause, *e.g.* scabies, and treat it. If the lesions are on the buttocks, thighs or legs the patient should be kept in bed. Antiseptic baths have been recommended, but they sometimes spread the mischief. In war time I found the best applications were a 1 per cent. solution of silver nitrate, or a 1-2000 spirituous solution of bichloride of mercury dabbed on frequently and allowed to dry. When the crusts are thoroughly desiccated they may be removed by applying a weak mercurial ointment (*vide* “*Impetigo*,” p. 28), and the underlying ulcer may be dressed with the same ointment till healing is complete.

There is a rare variety of ecthyma sometimes met with in young and weakly children—occasionally though not always associated with chicken-pox or vaccinia—known as **Ecthyma gangrænosum**, **ecthyma terebrans infantum** or **dermatitis gangrænosa infantum**. The lesions are severe and gangrenous, the constitutional disturbance is often great, and the prognosis is grave. The causal organism is the *streptococcus pyogenes*, with which the *bacillus pyocyaneus* has occasionally been discovered. It has been suggested that toxins from some tubercular focus may also play a part in the production of the lesions.

Another variety of ulcerating streptococcal infection of the skin of children is **Dermatitis vacciniiformis infantum**. In this the lesions, which occur chiefly on the buttocks and round the genitals, begin as tiny erythematous macules, which are soon covered by small umbilicated vesicles filled with clear serum which rapidly becomes purulent. They often resemble closely the lesions of varicella.

DEEP STREPTOCOCCAL INFECTIONS

Erysipelas—St. Anthony's Fire—The Rose

Definition.—Erysipelas is an acute streptococcal infection associated with rise of temperature and characterised by inflammatory reddening

and swelling of the skin. It occurs most frequently on the face or in the neighbourhood of wounds.

Etiology.—The disease is caused by Fehleisen's "*Erysipelcoccus*," which is now known to be identical with the *streptococcus pyogenes*. Occasionally *staphylococci*, *pneumococci* and *typhoid bacilli* have been found associated with the streptococcus. It is probable that for the production of the disease a specially virulent strain of the streptococcus is required, as well as a local lessening of resistance. The inoculation of the organism takes place through some visible or invisible abrasion of the skin.

Symptoms and Course.—An attack of Erysipelas usually begins with a rigor which is followed by a sudden rise of temperature to 102°–104° F., accompanied by headache, malaise and sometimes nausea. These symptoms follow the implantation of the streptococcus at an interval which varies from a few hours to two or three days. The local phenomena are a bright red glazed patch on the skin, distinctly circumscribed by a raised red border (the advancing edge of the disease) which is sharply marked off from the surrounding unaffected integument. The affected patch is swollen and œdematous, and bullæ may form on its surface. Sometimes one can trace the reddened lymphatic vessels passing from the site of the disease towards the lymphatic glands, the nearest of which are generally swollen. The erysipelatous patch spreads peripherally, sometimes slowly, sometimes rapidly, and occasionally clears in the centre as it does so. If loose tissue, such as that of the eyelids, is involved the swelling may be very great. After a few days the raised red edge ceases to spread except at one or two points, and soon, unless the case is a very severe one, the extension of the disease terminates, the swelling subsides, the tense, reddened skin becomes looser and pales, a little desquamation occurs, and the skin assumes its normal appearance. The attack runs its course in from ten days to three weeks.

Suppuration and localised gangrene may complicate erysipelas, though this is rare.

Death may occur, more especially among weakly individuals, from septicæmia, septic pneumonia, meningitis, nephritis, or heart failure. Most patients with erysipelas, however, recover. The disease has a strong tendency to relapse.

Sometimes it occurs as an intercurrent malady in patients suffering from lupus, carcinoma, or sarcoma, and it has been said that the acute infection has a beneficial effect upon the pre-existing disease. I have seen the complication several times, but have never been able to satisfy myself as to the alleged benefits.

Histo-pathology.—On section a patch of erysipelas shows marked cellular infiltration of the whole thickness of the skin with dilatation

of the capillaries—and chains of streptococci may be discovered at and beyond the margin of the inflamed tissue, as well as in its substance. The lymph spaces are often choked with streptococci.

Diagnosis.—The features of the disease are so characteristic that there is little risk of confusion.

Treatment.—The disease is highly contagious, therefore the sufferer should be isolated, and kept in bed on a nourishing, easily digested diet. Quinine in doses of two grains thrice daily with fifteen minims of nitro-hydrochloric acid may be given. Tinctura Ferri Perchloridi, in 15–30 minim doses thrice daily, is an old remedy, which has stood the test of time, and which is still regarded by many as a specific.

Anti-streptococcic serum and streptococcic vaccines have been recommended, but are of doubtful utility. I prefer to administer injections of a 1 per cent. solution of butyrate of manganese. The dose is 1–2 c.c. injected intramuscularly every four days. "Substituted urea product" (S.U.P. 468—British Drug Houses) may also be injected. The dose is 1 c.c. which contains 0.002 gram. of the salt.

The best local treatment is to paint the affected part once or twice daily with a pigment of equal parts of Ichthyol and water. This dries into a firm varnish, especially if it be dusted over with a bland dusting powder, and rapidly controls the spread of the disease and brings about its subsidence. At the same time the unaffected skin beyond the spreading edge of the disease may be painted with tincture of iodine. This is said to mobilise an army of leucocytes ready to resist the further advance of the streptococci.



FIG. 3.—Chronic œdema of eyelids and face following a chronic streptococcal infection.

Recurring Erysipelas

In addition to Acute Erysipelas there is a chronic attenuated form of streptococcal infection which resembles erysipelas, though it does

not run an acute course, is not accompanied by systemic disturbances, and is not characterised by the raised red advancing border of that disease. The condition is due to some persistent concealed focus of streptococcal infection, and it is probable that the organisms are of low virulence. The usual site of these recurrent attacks is the face, and in all cases a careful examination should be made of the mouth, teeth, gums, tonsils, nose, nasopharynx, eyelids, and the whole skin of the face, for any possible source of chronic infection. The attacks usually follow upon some condition that has lowered the local or general resistance, *e.g.* exposure to cold, as in a long motor run, or any disturbance of general health. The affected part flares up in a vivid red, with considerable swelling; but the attack subsides in a day or two. Recurring attacks tend to leave some local thickening behind, and if frequently repeated, the thickening becomes marked and permanent (the post-erysipelatous solid œdema of Jonathan Hutchinson).

Treatment.—Try to discover the source of infection, and deal with it. The whole train of symptoms may arise from an almost invisible fissure at the angle of the mouth, or the nasal orifices infected by streptococci.

During an attack apply Calamine lotion containing five grains of Ichthyol in the ounce to the affected part, and administer tincture of perchloride of iron. Between the attacks give a course of injections of butyrate of manganese.

STAPHYLOCOCCIC DISEASES OF THE SKIN

A staphylococcic infection may be superadded to an already existing disease of the skin, *e.g.* eczema or acne, and produce special symptoms. But staphylococci are themselves responsible for certain skin affections, chief of which are *sycosis non-parasitica* or *coccogenic sycosis* or *folliculitis of the beard and whisker area* : *folliculitis* wherever found : *follicular impetigo* (or *Impetigo* of Bockhart) : *dermatitis papillaris capillitii* or *Acne keloid* : boils and carbuncles.

Boils and Carbuncles

Definition.—A **boil** or **furunculus** is an inflammatory infection of one of the glands of the skin by the *staphylococcus pyogenes aureus*. A pilo-sebaceous follicle is the most common site of infection, but the mischief may arise in a sweat duct or a ceruminous gland. The inflammation culminates in a central necrosis, and the separation of a “core.”

Etiology.—Except in cases of pyæmia, furunculosis is due to inoculation from without. The *staphylococcus pyogenes aureus* finds its way along the shaft of the hair, or into the orifice of a sweat gland, usually under the influence of scratching, chafing or friction of the skin.

For this reason boils are not infrequent complications of scabies ; or the necessary antecedent injury to the epidermis may be produced by the friction of a rough collar edge, or, in cavalry soldiers or hunting men, by the rubbing of the clothing against the thighs and buttocks.

The general condition of the individual may predispose to the infection—and in all cases of boils it is advisable to examine the urine for sugar and albumin, as glycosuria and nephritis lower the powers of resistance. So also do anæmia, chronic constipation, and overwork.

The causal organism may be derived from some ordinary pus infection on the skin, or from another boil.

Symptoms and Course.—Boils may occur in either sex at any age, but adult males are most frequently affected. They occur most often on regions of the skin exposed to friction and possible contamination, and more particularly in areas where the pilo-sebaceous follicles are large, *e.g.* the back of the neck, the armpits, the face, the buttocks and thighs, the forearms and the backs of the hands. The absence of pilo-sebaceous follicles from the palms, the soles, and the mucous membrane of the lips explains the comparative freedom of these regions from furuncular infection.

A boil begins as a small, itching, reddish nodule, which soon becomes hard and painful. At this stage it may abort—the defensive mechanisms of the body having overcome the invading germ—and the mischief settles down without suppuration, and without scarring. But most often the inflammatory process continues. The nodule spreads peripherally and deeply, rising at the same time above the level of the surrounding skin in the form of a conical tumour. At the end of three or four days one finds a hard, painful, acutely inflamed, bright red or reddish-blue cone-shaped mass, covered by stretched and glistening skin, and surrounded by more or less brawny infiltration. The nearest lymphatic glands enlarge. Pressure upon the boil or movement of the muscles underneath it causes great pain. The pain, which is a constant symptom of a boil, is most intense if the furunculus is situated in dense tissue, *e.g.* in the skin of the back of the neck, or in the external auditory meatus, where the skin is firmly attached.

In a week or ten days the boil is “ripe.” A tiny pustule forms on the apex of the cone-shaped mass ; the pustule ruptures, and a few drops of blood and pus escape with a temporary diminution of the pain. On examining the orifice produced by the rupture of the pustule one sees a yellowish-white plug of matter. This is the “core,” as yet firmly attached in the depths of the boil, so that any attempt to remove it by traction causes pain. Suppuration progresses steadily in the centre of the boil with the discharge of pus in moderate quantity, and gradually the deeper attachments of the core are digested away, and in a few days it is extruded or may be removed mechanically. The core consists of

the necrosed follicle and some of the adjacent tissue. After its removal the interior of the boil resembles the crater of a volcano—its edges overhanging, its walls covered by irregular granulations. The defensive infiltration round the furuncular cavity is still palpable, but pressure and movement are no longer intolerable. Gradually healthy granulation tissue fills the cavity; the red-violet hue of the surrounding skin subsides, and the site of the boil is marked by a pigmented scar, which by and by becomes pale. A boil usually runs its course in three or four weeks.

It is rare for a patient to escape with only one boil. The infective agent is so easily transferred to other parts of the body that successive rather than single boils are the rule.

A CARBUNCLE is nothing more than a conglomeration of confluent boils, due to the simultaneous infection of a number of adjacent pilosebaceous follicles. It may be of very large extent, and the core may be a large slough of cutaneous and subcutaneous tissue. Each of the many orifices on the surface of a carbuncle represents an infected follicle. The systemic disturbance may be great, and in the weak or aged a carbuncle may cause death.

Histo-pathology.—On section, one sees in the centre of a boil a mass of tissue undergoing necrotic change. Surrounding this there is dilatation of capillaries, with a plentiful extravasation of leucocytes.

Diagnosis.—The acute development and characteristic course of a boil mark it off from other conditions. An *acute abscess* begins usually more deeply than a boil, and when fully developed is rounded or convex rather than conical in shape. It does not develop a “core,” and fluctuates on palpation.

Prognosis.—If uncomplicated a boil or an attack of multiple boils has a favourable prognosis. But a generalised fatal septicæmia or a phlebitis with pulmonary embolism may follow a single boil; or a boil on the face, situated in the region drained by the angular vein, may lead to phlebitis with sinus thrombosis and death.

General Treatment.—If there is coincident glycosuria or albuminuria, or manifestations of gout, anæmia or bodily exhaustion, treat the condition on general lines.

Diet should be nutritious but easily digested. Neisser has suggested an anti-diabetic diet even in cases with no glycosuria. Wines and spirits should be forbidden; malted liquors may occasionally be given. Constipation should be avoided.

Local Treatment.—If a boil is seen in its earliest stage, when it is nothing more than a reddish itching nodule of a few hours' duration, it may sometimes be caused to abort by the frequent application of 1-40 aqueous solution of carbolic acid, or by painting it with ichthyol and water (equal parts) or touching it daily with 10 per cent. formalin.

At this stage an intramuscular injection of 2 c.c. of butyrate of manganese may cause the boil to disappear. If a boil has passed the stage when abortion is probable—*i.e.* the third day, it should be treated as follows. Shave or cut as short as possible all the hair around it ; cleanse the skin with acetone or benzine ; paint it well with tincture of iodine, and apply over the boil a piece of mercurial plaster, sufficiently large to extend a third of an inch in all directions beyond the swollen area. Before application a hole should be cut in the centre of the plaster, and the hole should be carefully applied over the conical point of the boil. The plaster should be changed every two days. In addition to using mercurial plaster one may inject into the apex of the boil two minims of a 1-10 aqueous solution of carbolic acid. If these procedures are unavailing, and the pain and size of the boil continue to increase the comfort of the patient may be greatly promoted by the application of cold starch and boracic poultices, covered with gutta-percha tissue and changed frequently. Whenever the poultices are changed, the skin should be cleansed carefully with methylated spirits. Hot linseed poultices should be absolutely forbidden. The warmth promotes the growth of staphylococci on the skin with the danger of fresh boils ensuing. Or the boil may be dressed twice in twenty-four hours with Morison's magnesium sulphate cream, a mixture of exsiccated magnesium sulphate and glycerine of carbolic acid. The cream should be applied thickly to and around the boil and covered with several folds of gauze with jaconet over all. The dressing promotes exosmosis and leads to a copious discharge of serum. It also inhibits the growth of the micro-organisms.

As soon as there are signs of central necrosis with pus formation one may apply with advantage for a period of 5-10 minutes night and morning one of Bier's small suction glasses. This aids the escape of discharge, and hastens the separation of the core. Care must be taken to wipe all pus from the adjacent skin, which should be protected during the treatment by a thick coating of zinc ointment containing ten grains of Hydrarg. Ammoniatum in the ounce. Occasionally, if the pain is great, or there is much constitutional disturbance, or the boil is deep-seated, it may be necessary to incise it. After incision, dress with antiseptic compresses.

Multiple boils recurring on the buttocks, or in the genital and anal region, are often best treated with antiseptic hip baths ; *e.g.* baths of eusol (3i. to the pint) or of 1-2000 permanganate of potash solution ; or sulphur baths, made with sulphaquea bath charges, or collosol sulphur (Crookes)—four ounces of which should be added to a bath of 12-15 gallons. The baths may be repeated night and morning, and the boils may be dressed with compresses of eusol or other antiseptic. Boils in the external auditory meatus call for special treatment because of

their intense painfulness, which may be relieved by packing the ear lightly with absorbent wool soaked in warm olive oil containing ten grains of menthol per ounce. The pain may further be relieved by the administration of such remedies as phenazone or aspirin.

Internal treatment for boils, except in so far as it raises the general health, is of doubtful utility, but arsenic, quinine, strychnine and iron all have their advocates. Long experience still accords some credit to calcium sulphide in doses of $\frac{1}{4}$ – $\frac{1}{2}$ grain three times a day; and more recently, during the war, dilute sulphuric acid in doses of thirty minims thrice daily acquired a certain repute. But its effects are uncertain.

Stannoxyd—a preparation of oxide of tin—may also be tried. It sometimes acts well.

Many years ago Radcliffe Crocker introduced brewer's yeast for the treatment of furunculosis, and it is often of efficacy in doses of one teaspoonful or more thrice daily, alone or in beer. Fresh brewer's barm is more certain in its action than dried preparations of yeast in pill or powder form. Similarly, an occasional bottle of stout seems to have a beneficial effect upon boils, and, if taken at night, will often enable the patient to sleep.

Vaccine therapy with an autogenous or stock vaccine will often bring an attack of multiple boils to an end, and so raise the patient's resistance that recurrences cease. In my experience vaccines have been more useful in cases of boils, and more certain in their action than in any other skin disease. Injections of collosol manganese or butyrate of manganese also give excellent results. They relieve the pain, shorten the course of the boil, improve the general health, and prevent recurrences.

Carbuncles should be treated on the same general lines as boils. Warm antiseptic compresses are the best local applications. The old method of crucial incision is now abandoned, but I have on occasion excised carbuncles, cutting wide and deep, at an early stage, with immediate relief to the patient, and excellent end-results.

FOLLICULAR IMPETIGO : BOCKHART'S IMPETIGO.

Bockhart's impetigo is a superficial follicular suppuration, which may arise spontaneously without apparent cause, or which may follow the application to the skin of such irritants as tar, mercurial ointment, or turpentine. The follicular pustulation sometimes seen on the thighs, the pubis or other hairy part of the integument after the inunction of mercurial ointment is a type of Bockhart's impetigo. It may be met with on all the hair-bearing regions of the skin. The lesions are purulent from the first, *i.e.* there is no visible antecedent serous stage as in impetigo contagiosa, and each pustule is perforated by the shaft of a hair, for each lesion is at the mouth of a pilosebaceous follicle. A cultural examination of the contents of the pustules reveals the presence of the *staphylococcus pyogenes aureus*. The suppuration

is superficial and does not extend far outside the limits of the follicular aperture. It is too superficial materially to loosen the hair, and too restricted in area for the lesions to coalesce. It may, however, be followed by a deep folliculitis. In a few days the pustules dry up to form tiny crusts, which gradually separate, leaving sometimes a small circular depressed scar round the hair. Infection is from follicle to follicle, and fresh pustules may break out round adjacent hairs as the older ones subside. The condition may thus persist indefinitely.

Treatment is simple. If the condition can be traced to the application of any irritant, stop it. Open the pustules and apply a mild antiseptic lotion, *e.g.* 1-6000 solution of perchloride of mercury or 1-4000 solution of colloidal silver, or calamine lotion containing two grains of sulphur in the ounce. At night a dressing of the following ointment may be used, provided that mercury has not played a part in the production of the condition :---

R Hydrargyri Ammoniaci, grs. v.
Unguenti Zinci Oxidi, ʒi.
M.

MULTIPLE BOILS IN CHILDREN : MILIARY ABSCESES IN YOUNG CHILDREN :
FURUNCULOSIS MULTIPLEX INFANTUM : SUDORIPARA SUPPURATIVA :
STAPHYLOCOCCIC INFECTION OF THE SWEAT GLANDS IN INFANTS.

This condition is not uncommon in neglected, delicate, and sickly infants suffering from such diseases as impetigo, marasmus, chronic diarrhœa or chronic broncho-pneumonia. The skin of the child being delicate, the stratum corneum thin, and the orifices of the sweat glands relatively large, it is not to be wondered at that staphylococci sometimes find their way into the sweat ducts and penetrating into the sweat glands set up multiple tiny abscesses. Their commonest situations are the trunk, particularly on the back, the limbs, and on the back of the head. Each abscess begins as an elastic nodule situated in the dermis, palpable, somewhat indolent at first, about the size of a pea and covered by skin of a bluish-red colour. They gradually soften, and on incision discharge a thin pus. If very numerous and not treated carefully they may lead to considerable systemic disturbance, with rise of temperature, etc.

Treatment consists in antiseptic baths, *e.g.* permanganate of potash (1-4000), bichloride of mercury (1-10,000), with the use of a dusting powder of salicylic acid (grs. 10 in one ounce), and talc powder. When the nodule softens it should be incised, and the pus should be evacuated. Compresses of lotio calaminæ with grs. 2 of precipitated sulphur added to the ounce make a good dressing for abscesses which have been opened.

The condition is obstinate, and relapses are frequent, fresh abscesses tending to develop in crops.

STAPHYLOCOCCIC INFECTION OF THE SWEAT GLANDS : HIDROSADENITIS.

In women and less frequently in men, as a complication or sequela of eczema, intertrigo, the friction of tight clothing and hyperhidrosis, small staphylococcal abscesses may develop in the sweat glands in the axilla and sometimes near the anus. The infection may involve not only the gland itself but the tissue round about it. The disease is characterised by the development of one or more hard, palpable, hemispherical nodules, which increase in size slowly, and frequently soften and rupture through the skin. Their appearance is attended by some itching, with a sensation of fullness.

At first the skin is not discoloured, but as the abscess develops the skin over it becomes reddened and thinned. The contents consist of creamy pus. There is usually no "core."

As a rule the condition is intractable to treatment, and may last for weeks or months, abscess succeeding abscess.

In the early stages scrupulous cleanliness, with rest of the parts and the use of tincture of iodine (1-4), followed by a talc dusting powder containing 2 per cent. of salicylic acid, may help. Vaccine therapy, injections of collosof manganese 1-2 c.c., or butyrate of manganese are often useful. Applications of the X-rays have been recommended, and I have seen good results follow irradiation with a mercury-vapour lamp.

Shaving the hair, or cutting it short, is not advisable, because in shaving new portals of entry for the staphylococcus may be made, while as the hair grows after clipping it may set up irritation and predispose to further developments. Sometimes it is necessary to open the abscess. This should be done with a fine knife, care being taken that the escaping pus does not lodge upon the adjacent skin.

Sycosis

(Synonyms : Sycosis vulgaris ; coccogenic sycosis ; non-parasitic sycosis ; folliculitis barbæ.)

Definition.—Sycosis is a folliculitis, or inflammation affecting the pilo-sebaceous follicles. It may therefore occur on any part of the body provided with hair, but custom has limited the designation of sycosis to folliculitis affecting the beard, whisker and moustache areas of the face.

Etiology.—The *staphylococcus pyogenes albus* is the chief cause of the disease, with or without the *staphylococcus aureus* and *citreus*.

Symptoms and Course.—Essentially a folliculitis of the beard and whisker area, the disease is one of adult life affecting the male sex (Plate II, A and B). An examination of the sufferers in any out-patient clinic will show that many of them have had severe blepharitis in childhood, which has left them with scanty eyelashes and reddened lid-margins. There is little doubt that this early affection has a direct etiological relationship with the sycosis of adult life. The tears, the tear-sac and the intra-nasal mucosa become infected with organisms washed off the eyelids ; the skin of the upper lip becomes a wharf upon which many of these organisms find a lodgment, and here, when adult life comes, and the patient begins to shave, the friction of the lather-brush, the chemical action of the soap, and the minute invisible wounds inflicted upon the epidermis by the razor enable the staphylococcus that has long remained quiescent to invade the follicles, and set up inflammatory changes.

The lesions are papules, or pustules penetrated by a hair. Their situation is follicular and perifollicular. If the mischief penetrates deeply into the follicle there is considerable inflammation, thickening



(a)



(b)

COCCOGENIC SYCOSTS

Note wide distribution and infection of upper lip in each case

of the tissues, and pain. At first the hairs are firmly imbedded ; but later the suppuration loosens them, and they may be extracted with little pain--the root-sheath coming with them. The lesions are discrete, though the perifollicular inflammation may coalesce so that the whole affected area is infiltrated. The discreteness of the pustules lends to the clinical picture its most characteristic feature, for, if the mischief is widespread and the reddish inflamed skin is stippled over with a large number of shiny yellowish pustules, it bears some resem-



FIG. 4.—Coccogenic folliculitis along scalp margin.

blance to the interior of a ripe fig, from which (Greek *σύνκοι*) the disease takes its name.

As a rule the disease is widespread—affecting the greater part or the whole of the whisker area on both sides of the face, but it may remain limited to the upper lip. The lather-brush, the razor and the towel are probably responsible for the wide distribution. Pain of moderate degree, and a sensation of burning with some itching are the chief subjective symptoms. Chronic in its course, and often persisting for many years, the disease is liable to sudden and irregular exacerbations, due, sometimes, to exposure to cold winds, to external irritants of any kind, or to systemic disturbances such as constipation.

In severe cases some of the hair papillæ may be destroyed with

permanent local alopecia, but in most cases the papillæ escape destruction. Sometimes the actual folliculitis settles down for long periods, but the skin remains somewhat reddened, there are infrequent papules on its surface, with shiny smooth patches and here and there evidences of scaling. To this type the descriptive term of *eczema sycosis* has been applied.

A folliculitis identical in cause and character with coccogenic sycosis may occur on any hairy region of the body (Figs. 4 and 5).

Diagnosis.—Sycosis vulgaris must be distinguished from *pustular eczema*, affecting the same regions, and from *parasitic sycosis* or *tinea barbæ*.

In *pustular eczema* the pustules are not generally follicular or perifollicular, and consequently are not so frequently pierced by a hair. Further, the pustules tend to spread to the adjacent non-hairy skin. As there is not, in pustular eczema, a true suppurative folliculitis the hairs are not loosened. Intense itching and "weeping" are frequent.

Coccogenic Sycosis.

Tinea barbæ.

Distribution.	Widespread: both sides of face and upper lip usually affected.	Localised. One portion of one cheek usually involved. Upper lip often escapes.
Lesions.	Folliculitis and perifolliculitis with moderate degree of infiltration.	Marked infiltration, with development of raised indurated masses like blind boils, oozing pus from a gaping follicle in which is set a loose hair.
Fungus.	No ringworm fungus present, but cocci easily recognised with microscope.	<i>Trichophyton megalosporon</i> endo-ectothrix found in hairs from edge of the nodules.

Treatment.—Probably the chief mistake made in the handling of sycosis is that of too energetic treatment in the early stages. The process of reasoning is: "Here is a pus infection. Use strong antiseptics and the causal organism will be destroyed." Instead of such a happy issue ensuing the vitality of the tissues is lowered, the organism sheltered in the follicle remains almost unaffected, and the disease progresses actively. Unless sycosis is dealt with carefully in its early stage it may drift into a chronic and sometimes incurable condition.

Firstly, any associated condition of ill-health must be treated, and local sources of infection such as chronic nasal catarrh and blepharitis must be dealt with.

Shaving should be restricted, if not absolutely forbidden—the patient being recommended to clip the beard and whiskers with sharp scissors daily, and shave at most once a week, using a thin ointment rather than soap as an emollient. The old practice of removing the hairs by forceps was painful and of doubtful utility.

Local applications of many kinds may be employed. In acute cases, with considerable inflammation, lead and opium lotion may be applied frequently by day, followed by starch and boric poultices at night. Preparations of sulphur are particularly effective in cases of



FIG. 5. Coccogenic folliculitis on pubis and thighs.

folliculitis, and warm compresses of Collosol sulphur (Crookes') 1-16 sometimes act well. Calamine lotion containing five grains of Ichthyol per ounce may be used, or a 1-2 per cent. aqueous solution of Resorcin may be applied several times daily. In old-standing cases stronger remedies may be used, *e.g.* a lotion of equal parts of 1-2000 perchloride of mercury and 1-20 carbolic acid. Following Sir Norman Walker, I have found that painting a patch of sycosis once a week with *Liquor Hydrarg. Nitratis acidus* frequently gives good results. The acid should not be rubbed in with the vigour one employs when applying it to a patch of lupus. To mitigate the pain and arrest the caustic action

some bicarbonate of soda may be dusted on immediately after the application. To begin with, only a limited area should be treated in this way.

Dr. Walter Smith, of Dublin, recommends the following treatment, the object of which is the destruction of the germs in the follicles. A bluntly-pointed piercer of hard wood is soaked in a mixture of two parts of tincture of iodine and one part of glycerine of carbolic acid and bored thoroughly into each affected follicle. Bleeding is stopped by pressure with pledgets of cotton wool. The area treated is then washed with eusol or peroxide of hydrogen, and each little cavity is packed with "Bipp." The treatment is painful, but successful, and leaves no scars.

Ointments are, as a rule, ill-tolerated in this condition ; they interfere with the radiation of heat, and often their use is followed by an acute exacerbation of the disease. But I have found this ointment to be well borne :—

R Ichthyol, grs. v.
Hydrargyri Ammoniati, grs. v.
Ung. Zinci Oxidi, ʒi.
M.

This may be spread on strips of lint and applied daily, some of the ointment being rubbed gently into the skin before each change of the dressing. In old chronic cases, with considerable infiltration and not very active suppuration, an ointment containing precipitated sulphur (2 per cent.) and Salicylic acid (2 per cent.) may be used.

Pastes are better tolerated than ointments, and Lassar's Paste with 1 per cent. of Ichthyol or 1 per cent. of Sulphur added is often well borne. Brooke's ointment—*unguentum hydrargyri oleatis co*—may be applied at night on strips of lint bound firmly on the face. The remains of any paste or ointment should be removed with olive oil or spirit before renewing the application.

I have treated several obstinate cases by ionisation with $\frac{1}{2}$ per cent. zinc sulphate, with excellent results ; but to ensure success one should make sure that all the affected follicles are cleared of crusts and opened thoroughly by wiping the affected part over with liquor potassæ.

Autogenous or stock vaccines may be used, but my experience is that they are not nearly so effective in sycosis as in furunculosis. Injections of Collosol manganese sometimes bring about improvement. In some cases a weekly intramuscular injection of 1 c.c. of terpitchin—which is a pure turpentine free from rosins, and containing a small proportion of quinine and novocain—seems of value. The best method of treating coccogenic sycosis is, when all is said, to epilate the affected parts with the X-rays. Administer a full pastille

PLATE III



LUPOID SYCOSIS

Note cicatricial tissue in centre

dose, and the hair will fall in three weeks. At the same time there will be a marked diminution in the amount of infiltration. After the hairs have fallen, and before regrowth begins, it is well to treat the denuded skin with daily applications of some weak antiseptic lotion, or to rub in a 1-2 per cent. ointment of white precipitate. This will help to destroy any micro-organisms that may remain lurking in the follicles, ready to declare their presence by setting up a fresh folliculitis when the hairs grow again. Unfortunately there is a strong tendency for the disease to flare up again when the hairs return.

Lupoid Sycosis or Ulerythema Sycosiforme

Lupoid sycosis is a somewhat rare chronic inflammation of the follicles of the beard or whisker area, which usually begins on the cheek, below and in front of the ear. It is characterised by a progressive involvement of follicles, and spreads peripherally, clearing up in the centre and leaving a whitish, smooth, atrophic patch of skin, permanently denuded of hair through cicatricial destruction of the hair follicles. Round this denuded patch is a palisade of coarse irregularly disposed hairs emerging from inflamed follicles. Sometimes unilateral, the condition may occur on both cheeks simultaneously (Plate III).

Though it is known as lupoid sycosis, the condition is in no way tubercular.

Treatment.—A combination of X-ray treatment and ionisation with zinc will sometimes effect a cure ; but nothing will make the hair return to the denuded areas.

A word may be said of a somewhat special variety of folliculitis met with on the scalp, and known as

Quinquaud's folliculitis decalvans, or folliculitis cicatrisata

This is a coccogenic folliculitis of the scalp occurring sometimes in single, sometimes in multiple patches, varying in size, but rarely larger than a halfpenny. While the patch spreads slowly at the periphery the central part becomes denuded of hair and remains permanently bald. The disease may be arrested, but as in the case of lupoid sycosis the lost hair cannot be restored. It should be treated on the same lines as lupoid sycosis.

Acne keloid : Dermatitis papillaris capillitii

This is an unfortunately named variety of folliculitis. It is not an acne, nor yet is it a keloid in any true sense. Macleod's descriptive term—*Sycosis nuchæ*—seems to me the best yet suggested.

The condition is rare, and more often seen in men than women. It consists of a longitudinal band of chronically inflamed follicles, situated on the back of the neck, usually some distance below the margin

of the scalp hair. The surface and edges of this band are rugged to the eye, and hard to the touch. The lesion bears some resemblance to a low-lying rock-barrier emerging from the sea (Fig. 6). Pus is visible in some of the follicles, others are crusted over, and there is a dense perifollicular infiltration, which in process of time undergoes sclerosis. Coarse short hairs, lying irregularly, spring from some of



FIG. 6.—Acne keloid or sycosis nuchæ. Note the great infiltration, and the bristle-like hairs projecting from some of the follicles.

the follicles, and the presence of an occasional blackhead explains the origin of the title Acne keloid. The condition is very chronic, and tends to spread.

Treatment.—Many remedies have been suggested, *e.g.* scarification, ionisation, and the application of strong preparations of Iodine and Mercury. But the only remedy that will effect a cure is the X-rays.

CHAPTER IV

MICROBIC DISEASES OF THE SKIN (*continued*): BACILLARY DISEASES

DISEASES CAUSED BY THE TUBERCLE BACILLUS AND ITS TOXINS

THE tubercle bacillus is the cause of varied lesions of the skin. Firstly, it produces true tubercular lesions through inoculation either from within (endogenous infection), or from without (exogenous infection). To this group belong *Lupus vulgaris*, *tuberculosis verrucosa cutis*, *scrofuloderma* and *ulcus tuberculosum cutis* or *miliary tubercular* ulceration. These all have the following points in common: (1) the tubercle bacillus has been found in each; (2) all exhibit in varying degree the classical histological appearances of tubercle; and (3) inoculation of susceptible animals (*e.g.* guinea-pigs) with tissue from these lesions will cause tuberculosis.

Secondly, there is a class of skin affections in which some relationship with the tubercle bacillus is suspected, though not, in every instance, proved. In some of these affections the lesions do not exhibit the typical structure of tubercular lesions, and the presence of the tubercle bacillus has not yet been proved either by microscopical examination or by inoculation experiments. But a mass of evidence is steadily accumulating which will ere long compel us to revise some old opinions, and transfer some of the affections at present included in this class to the class of true tubercular diseases. For convenience, this second group is described as **the Tuberculides**, and comprises *lichen scrofulosorum*, *erythema induratum*, *papulo-necrotic tuberculides* and *sarcoids*.

The group is ill-defined, and includes lesions which may be due (1) to the action of tubercular toxins; (2) to the action of attenuated tubercle bacilli or to the reaction of the tissues to the presence of dead tubercle bacilli, or (3) to a sensitisation of the skin by the products of the tubercle bacilli, which, at some period of life invade the system of almost every one, so that the skin reacts with certain cellular changes when a fresh inoculation of tubercle bacilli occurs. The result is the same, whether this fresh inoculation of tubercle bacilli occurs through an external wound or from the blood stream. Wolff-Eisner has defined the Tuberculides as "local reactions, which show the response of the skin to sensitisation with derivatives of the tubercle bacillus, nature herself applying the tuberculin test."

Lupus vulgaris

Definition.—Lupus vulgaris is a chronic and usually slowly progressive tubercular disease of the skin, characterised by primary lesions known as lupus nodules.

Etiology.—The tubercle bacillus is the prime cause of the disease, and inoculation from without is the usual means by which it finds its way into the skin. This inoculation may be direct, *e.g.* into the skin of the buttock or thigh of a young child as it pulls itself along the floor of a room containing infected dust ; through “ post-mortem wounds ” —the cause of *verruca necrogenica*, which is a variety of *tuberculosis verrucosa cutis* ; or through a scratch with an infected finger-nail. I have known a woman who was in the habit of cleansing the sputum cup used by her phthisical husband inoculate the lobe of her ear in this way. And just as the spirochæta of syphilis has been inoculated in the process of tattooing, through the filthy habit of using the saliva of the operator to mix the pigments, so the tubercle bacillus has been introduced into the skin of a healthy person in the same medium. But probably the chief portal through which the infection finds its way to the skin of the face, which is the commonest situation of Lupus vulgaris, is the mucous membrane lining the nose. The resistance of the mucosa may be lowered by acute or chronic catarrh, and the tubercle bacillus inhaled in the inspired air may settle in an abrasion or crack. Thence it may spread through the lymphatics to the skin of the nose, the upper lip, or along the mucosa to the tear sac, or even more widely afield to the skin of the cheek. In all cases of Lupus vulgaris affecting the mid-line of the face or its neighbourhood, the inside of both nostrils should be examined carefully.

Of the indirect method of inoculation of the skin we have an example in the appearance of multiple lupus lesions in some children after an attack of measles or other febrile disease. The febrile attack lowers the resistance of the patient, and at the same time sets free swarms of active tubercle bacilli from some hidden tubercular focus, which find their way into the blood or lymph stream, and are ultimately deposited in the skin.

Though it is the custom to apply the term scrofuloderma to tubercular lesions of the skin arising in consequence of tubercular mischief in the bones or glands beneath it, one occasionally meets with lesions, produced in this way, which are indistinguishable from lupus, and are therefore entitled to be described as such.

Though lupus may affect all classes it is commonest among the children of the poor, who are ill-housed, ill-clad, and insufficiently nourished. It is more common among females than males, and there may be a family susceptibility to the disease as several members of one household may suffer. But this may be due to contact with the same

PLATE IV



(a)

LUPUS VULGARIS

(b)

Note ectropion and destruction of end of nose

Note healing centre, and spreading periphery

virulent source of infection, rather than to any particular familial predisposition.

It is a matter of academic rather than practical interest that Andersen * has shown definitely that in a large majority of all cases of Lupus vulgaris the bacillus is of the "human type." W. Sampson Handley, in his Hunterian lecture in 1920, threw some valuable light on the spread of lupus and the difficulty of its eradication. He holds that lupus is essentially a tubercular lymphangitis due to the entrance of the bacillus into a cutaneous lymph vessel. The lupus nodule has its origin in the proliferation of the endothelium of a lymph vessel in the centre of one of the papillæ. On his showing, the lymphatics of the skin are distributed to small areas—each of which is independent, there being no direct communication between one of these "primary lymphatic areas" and its immediate neighbours. Communication is through the lymphatic plexus of the fascia, to which lymph vessels pass from the superficial "primary lymphatic areas." Tubercular infection spreads down from the lymph vessel first affected into the plexus in the fascia—and then extends horizontally along the fascial plexus, ascending from the fascial plexus up along vertical lymphatics so as to involve other of the "primary lymphatic areas." In this way we get the development of lupus nodules at a distance from the original nodule, and separated from it by apparently normal skin. The early infection of the deeper lymphatics in the fascial plexus explains the difficulty of cure, and indicates the necessity, if excision is decided upon, of cutting deeply down to the muscle.

Symptoms and Course.—Lupus vulgaris almost always begins in childhood, and sometimes in infancy. Its progress is slow, its character indolent. The initial lesion is a nodule—a small tubercular deposit which develops below the epidermis. Gradually this nodule pushes its way to the surface, until it appears as a pin-point or millet-seed translucent mass, imbedded in the skin, of a reddish-yellow or yellowish-brown hue, masked somewhat by an attendant erythema. On diascopic examination (*i.e.* examination through a piece of glass, such as a microscopical slide, pressed firmly on the skin so as to empty the superficial vessels of blood and so get rid of the accompanying erythema) the nodules present the characteristic "apple jelly" or "apricot jam" appearance. The nodules are softer than the normal skin, and a spicule of match-wood may easily be bored into them. As they increase in size they become slightly protuberant, and project above the surface of the skin; but they retain a thin covering of epithelium which presents a smooth and shining appearance. Simultaneously with their increase in size the nodules increase in number—

* Andersen, "Archiv. f. Dermat u. Syph." 129, Pt. 2, 1921.

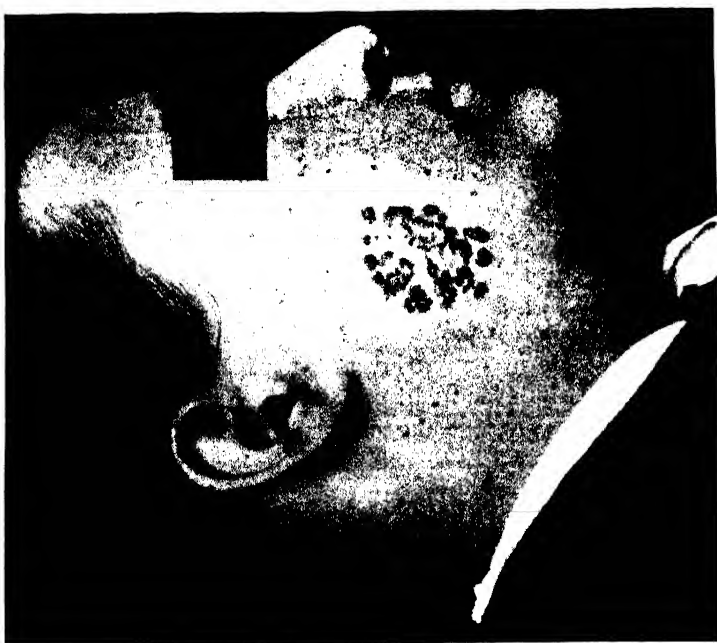


FIG. 7.—Lupus vulgaris. Note the nodules, separated in places by healthy skin, and in places becoming confluent.



FIG. 8.—Lupus vulgaris. The patch is beginning to clear in the centre, but is spreading at the periphery.

the spread being by the peripheral deposition of fresh nodules (Fig. 7). Except in the susceptible, with greatly lowered resistance, or in the weak and aged, the spread of the disease is slow.

As the disease extends, and more and more nodules are deposited peripherally to the earlier lesions, the older adjacent nodules tend to coalesce, so that a plaque of some size—"a lupus patch"—usually roughly circular, though sometimes irregular in outline, is formed (Fig. 8). While the disease is spreading peripherally, retrogressive changes are in progress in the nodules which appeared first. This is a characteristic feature of the disease: it tends to heal in the centre, while it spreads at the periphery. The retrogressive changes are of two kinds. Either the nodule shrinks and undergoes a kind of fibrous degeneration, or it ulcerates. Unlike other tubercular deposits a lupus nodule does not caseate. But whatever be the variety of the retrogressive change, it leaves a permanent scar. If ulceration occurs it is brought about either by secondary infection from without, or by a kind of interstitial necrosis. The ulcer is rarely deep, its edges are usually sharply margined, its surface is smooth, red and moist-looking, or studded over with actively granulating tissue which bleeds readily. These spontaneous ulcers heal slowly, and when cicatrization has taken place a careful examination will always reveal one or more undestroyed lupus nodules imbedded in the scar tissue, which may constitute foci for fresh outbreaks of the disease. The presence of these residual nodules is of great diagnostic value. A syphilitic ulcer heals and no syphilitic nodule remains visible in the scar tissue; a lupus ulcer heals, but a nodule or two remains to declare the character of the disease. And, further, a lupus scar has a strong tendency to contraction, and so may bring about deformities such as ectropion (Plate IV, A). This tendency is not nearly so marked in syphilitic scar tissue.

Though lupus may be met with on any part of the integument it has certain sites of election. Chief of these is the face, more particularly the skin over the end of the nose, the cheeks and the upper lip. Its distribution is usually unilateral, though it may be bilateral. The skin of the forehead is never affected except by secondary extension from an already existing patch on an adjacent skin area. Lupus erythematosus (*q.v.*) frequently affects the scalp; lupus vulgaris rarely. The skin over the breasts in women, and the skin of the genitals in both sexes, would seem to be endowed with some local immunity, for lupus in these regions is practically unknown. Lupus affecting the skin of the trunk and limbs is commonly seen in children. The outbreak of the disease in such multiple foci is probably consecutive to some febrile attack.

After the face the neck is most frequently involved (Fig. 9, and Plate IV, B), and after the neck the hands and forearms.

The frequency with which the face is affected depends in large measure upon the infectivity of the nasal mucosa. If a line be drawn from the supra-orbital foramen on either side to the corresponding angle of the mouth one encloses an area of skin which is particularly liable to be affected by lupus. And in practically every case, lupus



FIG. 9.—Lupus vulgaris. On the neck the disease is of the atrophic type.

occurring within this region may be traced back to an intra-nasal infection.

Lupus affecting the skin of the nose frequently leads to considerable swelling of the organ, and when the diseased tissues are removed it is usually discovered that there has been considerable destruction.

Lupus spreads readily from the nose to the upper lip, either by direct extension, lymphatic permeation, or by inoculation with germ-laden nasal secretion.

PLATE V



(a)

LUPUS VULGARIS

Note healing centre and spreading periphery



(b)

Note atrophic character and commencing epithelioma

Inside the nose the tubercular mischief may spread upwards, involving the tear sac, and producing a tubercular dacryo-cystitis, or it may spread backwards into the naso-pharynx. On the cheeks lupus appears in the disseminated form—one nodule, surrounded by peripheral satellites, which may coalesce into one large lupus patch; or these patches may be multiple. The disease may affect the skin of the external ear (Fig. 10), affecting most frequently the lobe, the whole of which may be permeated by lupus tissue and destroyed by ulceration.



FIG. 10.—Lupus vulgaris affecting the external ear. The whole lobe has been converted into a mass of tuberculous tissue.

As in the nose, so on the ear; the mischief may spread to the cartilage. On the neck, which the disease may reach by direct extension from the face, or in consequence of inoculation of the scar tissue over a ruptured tubercular gland, the disease spreads in serpiginous fashion, its advancing border being convex outwardly.

On the trunk it may spread widely, clearing up incompletely from one part of the skin as it invades the adjacent integument.

On the feet and hands, through its spread to the deeper parts, lupus may interfere seriously with function. On the hands, the feet, the

buttocks, the thighs, and over the front of the knees lupus may appear in a warty form (*vide* Lupus verrucosus).

It is important to be able to recognise lupus of the mucous membranes.

Lupus affecting the mucosa appears as a diffuse infiltration over which the mucous membrane is uneven and granular looking, bright red or bluish-red, soft to the touch, and readily made to bleed. Adjacent to this infiltration one may see in what otherwise appears to be normal mucosa small greyish nodules sometimes with a yellowish apex. Sometimes, especially in the nasal and laryngeal mucosa, the process is a hypertrophic one, and leads to the formation of papillomatous growths. Lupus affecting the mucous membranes occurs most frequently in the nose, on the upper lip, the tongue, the gums, and the hard palate (Fig. 11). After healing it leaves scars. As a rule lupus spreads from

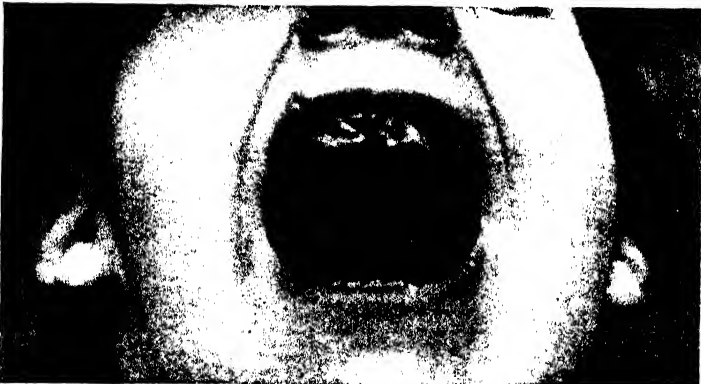


FIG. 11.—Lupus affecting the gums.

mucosa to skin. Sometimes the spread is in the other direction. The skin of the lip may be infected by spread from the mucous membrane of the nose, and the mucous membrane of the lip may become infected by direct extension from the skin. Lupus may spread from the skin of the eyelids to the palpebral and ocular conjunctiva.

Developing in early childhood lupus may persist all through a life that far exceeds the allotted span. Certain descriptive terms are applied to the varying lesions of lupus, *e.g.* **lupus crustosus**, **lupus hypertrophicus**, **lupus atrophicus**, **lupus exulcerans**, **lupus exfoliatus**, etc. These descriptive terms are self-explanatory. The point to remember is that the underlying disease is one and the same (Fig. 12).

Disfigurements produced by Lupus.—Lupus is responsible for more human disfigurement than any other disease but leprosy. Its

ravages upon the face may convert a beautiful child into an object of repulsion and pity. It is not a disease which causes much if any



FIG. 12.—Crusted lupus vulgaris : Lupus crustosus. Resembles impetigo contagiosa : but note the scar tissue, and underneath the crusts infiltrated lupus nodules would be demonstrable.

physical pain, but the mental pain of the sufferers must often be intolerable.

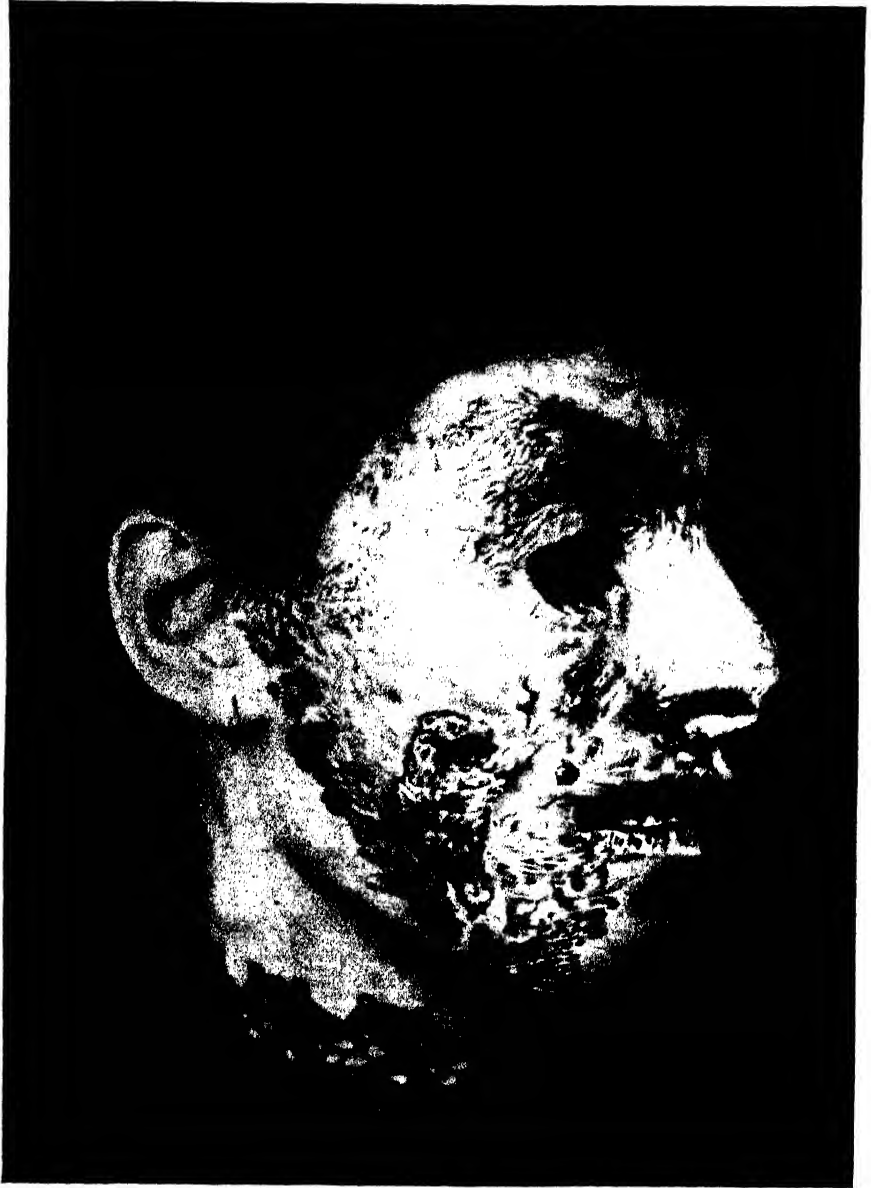
Certain structures are particularly susceptible to deformity through its activities.

The lower eyelid on one or both sides may be drawn down by cicatricial contraction (Ectropion). Lupus round the mouth, sometimes in consequence of ulceration, sometimes merely through fibrotic changes may contract the orifice till it will hardly admit the tip of a finger (microstomia). The lobe of the ear may be eaten away, and atrophic and sclerotic changes so affect the skin covering the cartilages, that the organ is reduced to a shrivelled mis-shapen structure bound firmly to the side of the head and covered by bluish-white thin integument. But the nose is deformed most often, and most severely. Frequently the cartilaginous portion of the nasal septum is perforated. That may escape notice unless it is looked for. Most often, however, the deformity of the nose is so great as to arrest attention at once. There are two main types: (1) the "parrot-beak" type, in which there is partial destruction or shrinkage of the cartilaginous nasal septum, with fibrotic or ulcerative changes in the septum cutaneum and the edges of the alæ nasi, followed by marked contraction, so that the tip of the nose is pulled sharply downwards, and the sides are pinched. The overlying skin is pale and atrophic, and the organ bears some resemblance to a parrot's beak.

(2) The "simian type," in which the tip of the nose, the septum cutaneum, the cartilaginous septum, and the lower portions of the alæ nasi would seem to have been torn off by a pair of rough pincers, so that the nasal orifices now look forward instead of downward, and the osseous septum may be seen dividing them. This condition is brought about by active and destructive ulceration, and when cicatrization occurs lupus tissue remains discernible in the skin that surrounds the nasal orifices. The destructive ulceration of lupus of the nose usually affects the soft parts and the cartilage. Syphilis, on the other hand, has a predilection for the nasal bones. Since all lupus scar tissue is strongly contractile, the nasal orifices may be reduced to mere pin-point holes. Lupus affecting the hands or feet may produce deformities and contractures by invading the deeper structures and setting up a teno-synovitis, or may even produce mutilation by attacking bone, and leading to the shedding of one or more of the phalanges. In the arms and legs lupus may produce deformity by causing lymphatic blocking, and a consequent pseudo-elephantiasis.

Complications.—An acute attack of erysipelas occasionally complicates lupus. Its results may be beneficial. Pulmonary tuberculosis may occur, though this is infrequent. Tubercular meningitis may ensue as a complication of lupus on the face. In the early days of X-ray treatment of lupus I saw within a short period three cases of tubercular meningitis consecutive to lupus. I believe that excessive X-ray treatment was a contributory cause in determining the metastasis.

PLATE VI



LUPUS VULGARIS (of thirty years standing)

Note deformities and epithelioma

I believe that, as a rule, a moderate-sized patch of lupus in a person with good resisting powers confers some degree of immunity against the attack of tubercle elsewhere.

Lupus carcinoma occurs in a small percentage of cases of long-standing (Plate V, B, and Plate VI). In its production excessive X-ray treatment may play a part ; but Lupus carcinoma was recognised before the X-rays were discovered, and I have seen at least six cases occurring in patients who stated that they had never been treated with the X-rays. This form of carcinoma is sometimes very malignant ; but sometimes, in my experience the malignancy has been only local, the blockage of lymphatics by the tubercular process interfering with the dissemination of the disease. My colleague, Mr. Thurstan Holland, has treated several cases for me with radium with excellent results.

Histo-pathology.—The masses of tubercular tissue known as lupus nodules lie at various depths in the skin. Some are immediately under the epithelium, and in many cases the epithelium over them is very thin. Other nodules lie at various levels in the skin, and some may be found in the subcutaneous tissue. They consist of a mass of epithelioid cells with large oval nuclei which sometimes stain badly. Giant cells are usually found in the larger nodules ; they may be absent from the smaller nodules. They are large multi-nuclear cells with their nuclei arranged peripherally. A few tubercle bacilli are found between the nuclei. Between adjacent nodules there is a fine reticulum of connective tissue in which a large number of lymphocytes and plasma cells are enmeshed. Running through between these lymphocytes and plasma cells are numerous small blood-vessels. The lupus nodule itself is generally devoid of blood-vessels. This is explained by the fact that the reaction of the tissues to the disease stimulates the formation of new vessels ; while the disease itself destroys the small vessels, the epithelioid cells being formed from their endothelium.

Prognosis.—Although Lupus vulgaris is a tubercular disease the prognosis as to life and health is on the whole favourable. If lupus is a purely local disease, as in most cases it is, the prognosis as to life is good. If it is an outward manifestation of a deep-seated tuberculosis, the prognosis is bad. Many sufferers enjoy otherwise excellent health, and a small patch of lupus may act as an immunising agent against more serious attacks from the tubercle bacillus. The possibility of lupus carcinoma developing even in comparatively young people who have had lupus for many years must not be forgotten ; and any warty growth appearing on lupus scar tissue and showing an early tendency to ulcerate should be dealt with promptly by free excision, or by radium treatment. Some varieties of lupus carcinoma are not very malignant. Others extend rapidly beyond the area affected by lupus, find access to free lymphatics, and may then involve glands and produce metastases.

Diagnosis.—Remember that lupus vulgaris (1) usually begins in childhood, and rarely after the age of twenty-one ; (2) is indolent and chronic ; (3) has a special predilection for the face ; (4) has a characteristic nodule which, though it may be masked by an accompanying erythema, always exhibits when examined diascopically the classical



[Photo by Dr. Oram.]

FIG. 13.—Multiple disseminated follicular lupus vulgaris. (A rare type.)

“apple-jelly” appearance ; and (5) has a tendency to clear up in the centre while it spreads at the periphery.

Confusion may arise with *syphilis*, especially in its late secondary or tertiary manifestations. But lupus is indolent, syphilis is active, and a nodular syphilitic deposit will involve as large an area of skin in a few weeks as lupus will in as many years. Further, the individual nodules of such a syphilitic deposit are redder in hue, firmer to the touch, less easily perforated with a spicule of wood, and on perforation in this fashion bleed more readily than lupus nodules.

If the condition is an ulcerative one, remember that a lupus ulcer is superficial, and may actually be raised above the level of the normal skin, and presents a reddish, smooth or granular base which bleeds at a touch ; while a syphilitic ulcer is quick-spreading and voracious, deep with sharp-cut edges, and its base is often covered with a purulent exudate. Lupus of the nose produces an entirely different kind of deformity from that produced by syphilis. Syphilis attacks the bone



FIG. 14.—Lupus vulgaris affecting arm.

Note the fine "cigarette-paper" skin covering the cicatrix.

and the soft parts ; lupus the soft parts and the cartilages. In a lupus scar, under the fine cigarette-paper skin there are always left a few isolated tubercular nodules, while a syphilitic scar is usually free from deposits.

A positive Wassermann reaction does not of necessity indicate that some lesion in dispute is syphilitic rather than tubercular, for the patient may quite readily be a sufferer from lupus who has had syphilis. On the other hand, if the lesion under discussion may, from its appearance,

be either tubercular or syphilitic, and the Wassermann reaction is negative, the lesion is almost certainly tubercular. A short course of intensive anti-specific treatment will solve the problem. If the lesion clears up quickly and does not recur, it is syphilitic; if it improves somewhat and relapses quickly, it is tubercular.

And it must not be forgotten that lupus is a disease of the young; syphilis, unless congenital, in which case certain stigmata should be apparent, is essentially a disease of adult life.

Further, lupus vulgaris must be distinguished from *Lupus Erythematosus*—a bad descriptive term which still survives. *Lupus vulgaris* is a disease of youth, *L. erythematosus* of adult life. *L.v.* has no tendency to symmetrical distribution, *L.e.* has in a marked degree. *L.v.* is characterised by nodules covered by a thinned epidermis; *L.e.* has no nodules and the epidermis over its lesions is thickened and studded over by tiny corneous hard scales, which if detached show on their under surface little teat-like processes which are withdrawn from the gaping follicular orifices. *L.e.* never ulcerates and never suppurates. It tends to undergo a cicatricial atrophy in the centre, leaving superficial slightly pigmented scars. In *L.v.* the scars are deeper, more retractile, and usually retain some "nodules." *L.v.* rarely affects the scalp, but frequently attacks the mucous membranes. *L.e.* affects the scalp with moderate frequency, and the mucous membranes but rarely.

A momentary confusion may arise between *Impetigo contagiosa* and *Lupus crustosus* (Fig. 12) in the case of young patients. In *impetigo* the history is short, there is no infiltration under the crusts, nor ulceration of the lesions, and no cicatrices are left. It is a quick-spreading, superficial, easily curable disease. All these features mark it off sharply from *Lupus vulgaris*.

Lupus must also be distinguished from *Rodent ulcer*, *Acne rosacea*, *psoriasis*, and *lepra*.

Rodent ulcer is met with at a later age than *lupus*, and at first may be even more indolent than *lupus*. Its habit of repeatedly breaking down in the centre, and healing up to break down again, and the "pearly edge" round about it are diagnostic points. But in doubtful cases a microscopical examination of a section should be made.

Acne rosacea occurs in adults, beginning usually after the age of thirty. The numerous small dilated vessels on the face, the papules and pustules which appear on the reddened area, the lack of a definite sharp margin to the disease, its bilateral character, the absence of true *lupus* nodules when the skin is examined diascopically, and the complete immunity from ulceration distinguish it from *lupus*.

Lupus on the trunk or extremities may be taken for *Psoriasis*. But *Psoriasis* has a special predilection for the extensor aspect of limbs;

it does not form scars, and its typical scaliness, revealed if need be by "grattage," mark it off from lupus.

In *Lepra tuberosa* the tubercular form of leprosy—the nodules are much larger than in lupus. Frequently they affect the forehead primarily; lupus does not do this. Lepra nodules are of a dirty ashen-grey or reddish-grey colour, and they have none of the translucency of the lupus nodule.

TREATMENT

General.—A first essential is to improve the conditions of life as far as possible. Fresh air and sunlight, warm clothing and good food all aid materially, but unfortunately these are difficult to procure for the chief sufferer—the slum child.

Internal treatment consists in the administration of such tonics as iron, arsenic, and quinine; or cod-liver oil, with creosote and other diffusible antiseptics. Good results have been claimed from the injection of sodium morrhuate. It is procurable as a 3 per cent. solution, and is administered by hypodermic injection. The initial dose should be $\frac{1}{2}$ c.c. administered twice or thrice a week, and gradually increased till the dose is 2 c.c. The treatment should be pushed till a focal as well as a general febrile reaction occurs. When a dosage of 2 c.c. subcutaneously has been reached, one may proceed to give this dose intravenously once a week, gradually increasing to 4 c.c. My experience of the remedy is limited but promising.

Tuberculin treatment has from time to time had a great vogue in the treatment of lupus, but I have found it disappointing. Almost always it produces a temporary improvement; but in my experience this is never lasting, and all too often in the end the disease has begun to spread rapidly, and has had to be controlled by other means.

The administration of thyroid substance, pushed to the limits of tolerance, is a dangerous method of treatment once in vogue but now almost universally abandoned.

Local Treatment.—Success depends on knowing what cases to treat. Some cases of lupus are best left alone. A small indolent lesion in a person past middle age, which has existed for years without tendency to spread and which is not causing disfigurement, should not be attacked.

A patch of lupus in active evolution, spreading rapidly, should receive sedative treatment. Active treatment may stimulate the mischief. Applications of lead and spirit lotion, or of a varnish of ichthyol and water in equal parts, or starch and boric poultices, frequently changed, will often cause active manifestations to subside, and the lesion can then be dealt with.

The following are the chief means at our disposal :—

1. Surgical means : excision, curetting, linear scarification. 2. Chemical agents. 3. Refrigeration. 4. Electro-therapeutics, including X-rays, ultra-violet rays, ionisation, electro-cautery, fulguration.

(a) **Excision** is the method of choice for an isolated patch of lupus not too extensive to permit of removal without undue disfigurement. The incision should be carried widely outside the lesion, and down to the muscle, and the wound should be sutured carefully.

Excision is contraindicated for lupus affecting the orifices of the nose and mouth, and it should not be attempted if it entails the removal of an eyelid. It is, however, justifiable to sacrifice the greater part of the external ear, as the resulting disfigurement is usually less than the havoc which lupus can produce in that region.

(b) **Curetting or Scraping**.—Performed with a sharp spoon or skin curette, this procedure must be thorough to be effective. Under a general anæsthetic the diseased tissue must be scooped out. It is soft and friable, and usually easily removed. Healthy tissue, and sclerotic lupus tissue offer considerable resistance to the instrument. Bleeding is free and may be controlled by pressure. When it has ceased the raw surface may be painted over with a 5 per cent. solution of chloride of zinc, and subsequently dressed with a soothing ointment, *e.g.* Ung. Boracis. Curetting is a quick method of removing a large mass of tubercular tissue, but when the raw surface has skinned over it is almost certain that a few lupus nodules will still be visible, which will require to be dealt with separately.

(c) **Linear Scarification**.—This may be combined with curetting or performed alone. It is carried out under a general anæsthetic with a special type of multi-bladed knife with six blades set close together, spear-pointed, sharp, and each provided with two cutting edges. The scarifying should begin in the healthy tissue about $\frac{1}{4}$ inch outside the lesion, and be carried into the healthy tissue for the same distance on the other side. Proceeding systematically one should begin by making a series of vertical cuts across the whole area of the lesion from above downwards. Next, proceed as before, horizontally, and then diagonally from left to right ; and afterwards diagonally from right to left. The process should be repeated systematically several times till the whole area under treatment is converted into a pulp of finely minced tissue. The bleeding should be arrested by pressure, and the part dressed with compresses of eusol for thirty-six hours. It may then be dressed, as was first suggested by the late G. Stopford-Taylor, with Unguentum Glycerini Plumbi Subacetatis, which promotes an exosmosis of healthy serum. Healing is fairly rapid, and the treatment may be repeated after a fortnight. The ultimate result is a smooth pliable scar. The method gives excellent results in cases of hypertrophic lupus affecting

the end of the nose. It is of special value in lupus of the eyelids (where it has to be carried out with great delicacy of touch) because the cicatrix it leaves does not tend to contract and produce ectropion.

(d) **Chemical agents.**—Many chemical agents have been employed in the treatment of lupus, *e.g.* *silver nitrate*, which is useful for boring out isolated nodules; *potassa fusa*, used for the same purpose or for ploughing up an infiltrated patch, but now almost entirely abandoned because of the pain it causes and the ugly scars it produces; *carbolic acid*, in the form of “camphor-phenol,” *i.e.* equal parts of carbolic acid crystals and camphor crystals rubbed up together, painted on every day to promote a congestive erythema, stimulate leucocytosis, and thin down infiltration; *arsenious acid* with or without creosote; *lactic acid*, *trichloroacetic acid*, and many others. At the moment two chemical agents hold the field, *viz.* *Pyrogallic acid*, with or without *Salicylic acid*, and *Acid Nitrate of Mercury*. Pyrogallic acid is applied in the form of an ointment of 5–10 per cent. as follows:—

R Acidi Pyrogallici, grs. xxiv.–xlvi.
 Acidi Salicylici, grs. xv.
 Lanolini, ʒii.
 Paraffinum Molle, ad ʒi.
 M.

This should be spread on lint, using the weaker strength of ointment for children. The acids have a special affinity for lupus tissue, and in a few days the lupus patch begins to break down and an ulcer forms. The dressing should be changed night and morning, and continued as long as the patient can bear it. When the pain becomes intolerable, the application should be discontinued and the ulcer dressed with starch and boric poultices, under which it soon heals over. The pyrogallic acid should again be applied and the patch broken down once more. When this has been repeated several times, a large proportion of the tubercular tissue will have been destroyed. The scar is a satisfactory one, and isolated nodules remaining may be destroyed by boring the solid nitrate of silver stick into them.

Recently excellent results have been reported from the use of pyotropin. This remedy has a strong selective affinity for the lupus nodule, which it breaks down rapidly. The applications of pyotropin are painful, but the results are good in most cases, the resulting scar being soft and pliable.

Treatment with Acid Nitrate of Mercury.—Many years ago acid nitrate of mercury was first used in the treatment of lupus for boring out isolated nodules. But H. G. Adamson * has recently developed and systematised its application, and by so doing has made a very

* *British Medical Journal*, July, 1920, p. 123.

notable contribution to the efficient treatment of lupus. His method is as follows : The acid is applied by means of a small swab of absorbent wool twisted round the ends of a pair of finely pointed forceps. It is painted, with firm pressure, freely on the affected areas for from one to two minutes, care being taken to limit the application precisely to the lupus patches. No dressing is applied. A crust forms which falls in a few days, sometimes leaving a shallow ulcer which rapidly cicatrises, sometimes leaving completely repaired tissue behind. The treatment is applicable to all forms of lupus.

In cases of ulcerated lupus the solution is applied in the same way. The surface of the ulcer becomes dry and yellowish-white, but in a few days a thick crust is heaped up upon it. At the end of a week the crusts are removed, and the ulceration beneath them is dressed with a simple ointment till it heals. The application may be repeated from time to time. The pain, especially in the ulcerating cases, is severe, but lasts only for a few hours and is easily tolerated by adults.

I have found that to dust the area painted with the acid with a powder of equal parts of fuller's earth and bicarbonate of soda makes the treatment easily tolerated even by young children ; but, naturally, this mitigation of the pain by neutralising the acid lessens the efficacy of the treatment. However, that only means it must be repeated the oftener. I have given Adamson's method a very extensive trial, and, all over, the results have been excellent.

Recently good results have been claimed from the use of Brass Paste, containing 86 per cent. of basic copper sulphate and 14 per cent. of basic zinc sulphate. To this 1 per cent. of picric acid may be added, to increase its penetrative powers. Applied thickly on strips of lint, the paste eats into and dissolves the nodules and the resulting cicatrix is said to be smooth and pliable.

(e) **Refrigeration.**—Lupus may be treated with carbon dioxide snow. Firm pressure from one and a half to two minutes with a moulded piece of " snow " a little larger than the patch to be treated causes a deep slough. If, after the wound is healed, an infiltrated mass of lupus tissue still remains, the process may be repeated. If only nodules are left, they may be destroyed individually with a solid silver nitrate stick or by ionisation with zinc. This method is especially effective in a lesion on the cheek, when the lesion is single, of moderate size, and hypertrophic. Caution should be observed in using this method in the elderly and under-nourished, whose reserves of vitality are low. The treatment may then make things worse.

(f) **Electro-therapy.**—Electro-therapeutic agents are the *X-rays*, *ultra-violet light*, *ionisation*, the *electro-cautery*, and *fulguration* with a high-frequency spark. The *X-rays* should not be used indiscriminately in the treatment of lupus. They are best reserved for ulcerated cases,

or for cases with much chronic infiltration. One-third of a pastille dose every fortnight till two full pastille doses have been given is enough for one course of treatment. It may be repeated after an interval of two months if need be.

Ultra-violet light is best applied with the original Finsen lamp ; but in this country we have to be content with modifications. Kromayer's mercury vapour lamp gives good results. The radiation should be diffuse ; the parts adjacent to the disease should be protected with lead foil, and the distance between the patient and the lens should be three inches. A treatment lasts for ten minutes in the case of adults, and seven minutes for children. I have had quite satisfactory results from radiation in this way, both with Kromayer's lamp and an electric arc-lamp with electrodes of pure tungsten.

Light Baths.—These local applications of ultra-violet light may be reinforced by general "light baths" which are found to be of great service in surgical tuberculosis as well as in lupus vulgaris. In this country, except for a short period of the year, and in certain districts, actual sun baths are impracticable. A substitute is found in the light from an arc lamp, with electrodes of carbon impregnated with tungsten. The spectrum of this light gives a very good imitation of sunlight. Mercury vapour lamps may also be used for general light baths.

The light baths, to which the whole body may be exposed—the eyes being carefully protected—produce a general reddening of the skin followed by desquamation. Repeated treatments lead to pigmentation of the skin indistinguishable from deep sunburn, and the patients who develop pigmentation most quickly and most deeply usually benefit the most.

These light baths have a remarkable effect, more particularly on the "sun-starved" children of the slums. The general health improves. There is some slight increase in the number of red blood corpuscles: the hæmoglobin index rises, and there is a leucocytosis of a moderate degree, the chief increase being in the lymphocytes. The blood-platelets also increase, and the blood, as proved by Colebrook, Eidenow, and others, develops definitely bactericidal powers. There is a rise in the inorganic phosphate and in the calcium content of the blood if low. The child feels better and looks better, and the lupus lesions, whether on the skin or in the mucous membrane, begin to improve. This occurs even when no special concentration of the ultra-violet light has been directed on to the lesions ; but where, in addition to the generalised light-baths, there is a definite attack upon the affected areas by local applications of the ultra-violet light, the improvement is more rapid.

These light baths act very well on diffused tuberculides, but I

have seen one patient—a girl of twenty-two—who had pulmonary phthisis in addition to numerous scattered tuberculides, experience a sudden and severe exacerbation of her lung trouble, while undergoing treatment. Whether *post hoc* or *propter hoc* I am not prepared to say; but such an experience engenders caution. Similar experiences have been recorded by others.

Ionisation.—The cataphoresis of zinc salts is most effective in the destruction of scattered nodules of lupus. Success depends on technique. The area to be treated should be rubbed briskly with a pledget of absorbent cotton soaked in Liquor Potassæ. This denudes the nodules of their thin epithelial covering, and allows the ions to enter the broken surface readily. The alkali should be removed by wiping the part with a little distilled water. Two thicknesses of lint soaked in 2 per cent. zinc chloride solution or 10 per cent. zinc sulphate solution are laid over the patch, and an electrode of pure metallic zinc, attached to the positive pole of the battery, is applied with firm pressure. The indifferent electrode is applied to any convenient part of the body. A current of 2–3 milliamperes per square centimetre of area treated is applied for ten, fifteen, or twenty minutes, according to the extent of the disease and the tolerance of the patient. The treatment leaves the nodules dry and glazed, surrounded by a whitish collar of coagulated albumen. A dressing of some simple ointment is applied. The reaction subsides in a week, and the treatment may be repeated at fortnightly intervals. The nodules disappear rapidly; the cosmetic result is excellent. This method is particularly useful in removing isolated nodules left after X-ray or ultra-violet ray treatment. In ulcerating lupus it may be used alternately with the X-rays. It is also effective in treating lupus of the mucous membrane of the nose.

The *electro-cautery* is best reserved for treatment of the mucous membranes. Used on the skin it tends to produce ugly, thickened scars. For the treatment of the mucous membrane of the nose and mouth it has no equal.

Technique.—The cautery point is applied to the centre of the affected part, the switch is closed and the part is cauterised. The aim is to char slowly, and not burn quickly, therefore the cautery point should be of a dull red, not a glowing white. The most effective method is to make a series of punctures all over the affected mucosa at short distances from each other. There should be no bleeding. The pain is slight; healing occurs inside a fortnight, and the treatment may be repeated as required.

X-rays, radium, and ionisation with $\frac{1}{2}$ per cent. solution of zinc chloride may also be used for the treatment of the mucous membrane of the nose.

Fulguration with a high-frequency current and a metal electrode is

PLATE VII



LUPUS VERRUCOSUS

a rapid method of treating a large patch, or a fungating mass of lupus tissue on the end of the nose. It must be done under a general anæsthetic. Unless used carefully it may leave very ugly scars.

In treating lupus two things should be aimed at : (1) the eradication of the disease, and (2) the avoidance of undue scarring. A judicious combination of methods usually gives the best results, and one should not be content that a lupus lesion has been removed from the face unless one is satisfied that no disease still lurks in the nose.

Lupus verrucosus—Tuberculosis verrucosa cutis

This variety of tuberculosis of the skin is always due to a local inoculation from without. Though it may occur anywhere on the skin, its commonest situations are the backs of the hands and fingers, and the buttocks. It may be auto-inoculated, *e.g.* by the sputum of a phthisical patient infecting a tiny wound on his hand, or it may be acquired, *e.g.* by a child infecting an abrasion on the buttock with germ-laden dust from the floor. Ordinary lupus vulgaris affecting the extremities, especially the legs, tends to assume a warty appearance.

The condition begins as a kind of hard wart on a reddish or violaceous base. At the apex of the warty excrescence, which is often slightly painful, a tiny miliary abscess develops. The abscess ruptures, discharges a bead of pus, and cicatrises, leaving a small depressed scar. The lesion extends peripherally, other miliary abscesses form on its summit, discharge and dry up. A fully developed lesion presents a very characteristic appearance (Plate VII). It is surrounded by an *external* slightly inflamed reddish smooth zone ; there is an *intermediate* zone of reddish-violet hue, exhibiting tiny crusts, little pustules, or small ulcers ; while the *central* zone is greyish-black or reddish-black in colour, irregular, papillomatous and horny, sometimes ploughed through by fissures, or sunk with depressed scars.

A special type of lupus verrucosus is “ *anatomical tubercle* ” or “ *post-mortem wart*,” met with in pathologists and sometimes in butchers. It is due to direct inoculation through a skin wound, and begins within twenty-four hours of infection as an erythema, on the top of which there gradually develops a papulo-pustular lesion with an infiltrated base, which by and by becomes an irregular crusted or warty chronic growth, reddish-violet in hue, and sensitive to touch. “ *Anatomical tubercle* ” may set up a lymphangitis and adenitis, especially if the infection is a mixed one, and general tuberculosis may follow.

Lupus verrucosus spreads slowly. It is the most indolent form of tubercular lesion, and as a rule remains strictly local, but systemic infection may occur in patients with a low resistance.

It must be distinguished from *lichen verrucosus* and from *syphilis*.

Lichen verrucosus occurs chiefly on the front of the legs, itches intensely, and does not show signs of niliary abscesses with scar formation.

A papulo-pustular hypertrophic syphilide does not show the three characteristic zones of lupus verrucosus ; it is more active, more inflamed, and there are probably other signs of syphilis.

Treatment should be by free excision or, if that is impracticable, a thorough application of the curette, followed by zinc ionisation ; or the use of pyrogallic and salicylic ointment, as described in the treatment of lupus vulgaris, will effect a cure. CO_2 snow will also cure it.

Scrofulodermia

Definition.—Scrofulodermia is a tubercular disease of the skin associated with, and most often arising by direct extension from, tubercular disease in other structures, such as the lymphatic glands or bones.

Symptoms and Course.—The disease affects the young chiefly, and both sexes indiscriminately, and its site of election is the neck. It begins by the formation of sub-epidermal or subcutaneous nodes, which enlarge slowly and invade the skin ; or by the direct extension of some deep-lying tubercular process, *e.g.* in the glands to the overlying integument. The skin becomes adherent to the underlying node, assumes a livid red colour, thins and perforates, and a yellowish fluid is discharged from the softened node containing debris of caseous material. A deep ulcer or a fistula is formed. The ulcer or ulcers have characteristic livid, irregular, weak-looking, undermined edges. The ulcer tends to spread in depth and area, and may cause extensive destruction of the skin and deeper parts. I have seen an extensive dissection of the large vessels of the neck made by such an ulcer. The ulcers may persist for years. If healing can be brought about, the scars are irregular in shape, often hypertrophied, and usually characterised by teat-like processes or undermined bridges of skin.

Though it may spread rapidly, scrofulodermia, like all other tubercular affections of the skin, is, as a rule, indolent in character.

Diagnosis.—The complete absence of the characteristic apple-jelly nodules distinguishes it from *Lupus*. Lupus may arise by direct extension from a tubercular gland to the skin ; but in that case the skin lesions present the true characteristics of lupus. There are, however, types intermediate between scrofulodermia and true lupus. Scrofulodermia must also be distinguished from *syphilitic ulceration*. Unless it is hereditary, syphilis is met with as a rule at a later age than scrofulodermia. Further, the syphilitic ulcer spreads rapidly, scrofulodermia slowly ; the former has sharp-cut, steep, infiltrated edges ; the latter weak, irregular, undermined edges. In syphilis there are usually other evidences of the disease, and a positive Wassermann reaction ; in

scrofuloderma there are other signs of tubercle and a positive von Pirquet's test.

Mycotic diseases of the skin, *e.g.* *Sporotrichosis* may give rise to confusion. Here the discovery of the fungus, and the effect of treatment with iodine will clear up the diagnosis.

Treatment. General.—Improve the patient's condition of life with a view to raising his resistance. Administer iron, arsenic, cod-liver oil, and give injections of morrhuate of soda.

Locally.—X-ray treatment is of great value. Treatment with zinc ions and fulguration are also of use. Surgical measures directed to removing the ragged undermined edges, cleaning up the base of the ulcer, and extirpating the underlying tubercular focus are of great value. The ulcers may be dressed with iodoform—preferably in crystalline form, and with lotio rubra or with a stimulating salve such as dilute nitrate of mercury ointment. Ultra-violet light treatment is also valuable.

Miliary Tubercular ulceration : *Ulcus tuberculosum cutis*

This is a rare form of tubercular ulceration met with usually in patients suffering from advanced phthisis or visceral tuberculosis. The lesions begin rarely, if ever, on the skin, usually on the mucous membranes and especially at the muco-cutaneous junctions. The lip is the commonest site, but the ulcers may be met with round the anus, or at the urethral orifice. They begin as a tubercular nodule in the mucosa, which breaks down rapidly and forms a superficial very painful ulcer of varying size, the base of which is covered with tubercular granulations. The pain is a characteristic and peculiar feature of this type of tubercular ulceration.

The appearance of these ulcers in a patient with severe tuberculosis is a bad prognostic sign.

Treatment. Multiple puncture with the galvano-caustic needle gives great relief from the pain, and often brings about healing. X-rays may also be tried, or thorough curetting, and subsequent dressing with crystalline iodoform.

THE TUBERCULIDES

Something has already been said as to the etiology of that group of skin lesions classified as tuberculides (p. 47). But we may repeat that opinion is still divided as to their precise relationship with the tubercle bacillus. Some hold that they are due to the action of tubercular toxins ; others that they are caused by a local tissue reaction set up by the presence of dead or attenuated tubercle bacilli.

Clinically the members of the group have certain common features. The lesions may occur symmetrically or asymmetrically ; they tend to

be disseminated, and to come out in crops without any febrile accompaniment. They are prone to break down, but do not tend to spread progressively. They have certain sites of predilection, and a tendency to chronicity, but they are relatively benign.

Chief among them are : (1) *Lichen scrofulosorum* ; (2) *Acne cachecticorum* ; (3) *Erythema induratum* (Bazin) ; (4) *Papulo-necrotic tuberculides* ; (5) *Sarcoids* ; (6) *Lupus Pernio*.

Lichen scrofulosorum

This is a rare disease. It may possibly be more frequent than is generally imagined, and may escape notice. Its relationship with tuberculosis is declared by the following facts : (a) in almost every case there are evidences of tuberculosis, *e.g.* caseating glands, corneal ulcers, tubercular disease of the bones, etc. ; (b) patients suffering from lichen scrofulosorum give a positive reaction to tubercular injections ; (c) occasionally a few tubercle bacilli have been demonstrated in the lesions, and (d) histologically some of the lesions are of the true tubercular type.

Probably the disease is not a toxi-tuberculide, but a manifestation of bacillary activity—the bacilli being relatively non-virulent.

Symptoms and Course.—Essentially a disease of childhood or youth, it is rarely if ever seen after the age of twenty. The lesions are minute, multiple, punctiform papules of a reddish-brown hue, or sometimes hardly distinguishable from the natural colour of the skin, and are grouped in patches or circles (Fig. 15), or scattered on the lateral aspects of the thorax, the abdomen, chest, back, sacral region, and more rarely on the extremities and face. Some have a somewhat waxy appearance, some are capped with a little horny tip ; some are crowned with a scale ; some exhibit a sluggish pustule. The eruption may itch slightly. Adjacent groups of lesions may become confluent, and new crops of lesions may appear from time to time. After a variable period, usually measured in months, the lesions disappear spontaneously, without trace, or leaving at most a tiny atrophic scar.

Diagnosis.—Remember that the disease affects chiefly the young tubercular individual ; so look for manifestations of tuberculosis.

Lichen ruber planus is associated with intense itching, the disease is acute, and the lesions have a predilection for the flexor aspect of the limbs. Further, lichen ruber planus is rare in childhood.

The papular miliary syphilide is not usually met with in the young ; it evolves rapidly ; its lesions are more numerous, and there are other signs of syphilis, *e.g.* a general adenitis, mucous patches in the mouth, and a positive Wassermann reaction.

Prognosis.—This is good—independently of whatever other

tubercular manifestations may be present. The disease tends to relapse and recur.

Treatment should be on general lines as for other tubercular



FIG. 15.—Lichen scrofulosorum.

affections. Locally a weak salicylic ointment, or an ointment containing 1 per cent. to 2 per cent. of ichthyol may be used.

Acne cachecticorum : Acne scrofulosorum

This is also a disease of childhood or youth, and is associated with other tubercular manifestations. The lesions occur chiefly on the back and on the extensor aspect of the limbs, especially the thighs and legs. They are small, millet-seed or pea-sized lesions, isolated, never grouped, infiltrated papules crowned by an indolent pustule. The pustule leads to deep crateriform irregular ulcers, which heal with a well-marked scar. The disease tends to disappear spontaneously if the patient's general health improves, and treatment should be directed to this end.

Tubercular Erythema induratum; Tubercular gumma; Bazin's Malady

There is a form of erythema induratum which is not tubercular. Here we deal only with the tubercular type.

Tubercular erythema induratum occurs in childhood and adolescence, chiefly among girls. It is rare in adult life. The sufferers usually exhibit several symptoms in common. They are pale and flabby; their circulation is poor; they suffer from cold hands and feet; they are prone to develop chilblains; their fingers are often cyanosed or tallow-coloured. Frequently they bear tubercular scars, or show evidences of active tuberculosis. (Dubreuilh.)

Symptoms and Course.—The calf of the leg is the site of election for the lesions. Rarely they appear on the thighs; more rarely still on the trunk or upper limbs. Varying in size from a millet seed to a walnut, and sometimes attaining even larger dimensions, they begin as deep-seated nodules, hard but somewhat elastic to the touch, and are often more palpable than visible. They grow slowly and painlessly, and are sometimes definitely margined, and sometimes merge imperceptibly into the normal skin; but always they are dark red or livid in colour, and sometimes the skin around them for some distance is of a purplish hue (Fig. 16). They may undergo spontaneous involution and disappear, but more often they soften in the centre, perforate the skin, which has become adherent to them, and discharge a kind of mucilaginous pus. The resulting ulcer is indolent, with scant discharge, and ragged, undermined dark red edges, and a base prone to bleed. Healing occurs after weeks or months, leaving a depressed scar with a pigmented border.

Histology.—In the true tubercular type the structure of the nodules is definitely tubercular in character. The nodules are arranged round the vessels in the cutis or sub-cuticular tissue, and the vessels in their neighbourhood are thrombosed and sometimes completely obliterated. Giant cells are sometimes present; and tubercle bacilli have been seen according to some, though this is denied by others. But tuberculin injections and animal experiments have given positive results. Probably the disease is due to an attenuated strain of bacilli.

Diagnosis.—Confusion may arise with *syphilitic gumma*. But the age of the patient, the indolence of the lesions, their general appearance and the result of a Wassermann test enable one to distinguish erythema induratum.

Sporotrichosis must also be thought of. But *sporotrichosis* has not the same predilection for the calf of the leg; the *sporotrichon* can usually be discovered microscopically, and the disease yields rapidly

to massive doses of iodine or potassium iodide, while erythema induratum does not.

Prognosis is fairly good ; but there is a tendency to recurrence with winter, and cure is invariably slow.

Treatment should be on the same general lines as for other tubercular conditions.

Locally, before ulceration occurs the application of colloidal iodine



FIG. 16.—Tubercular gummata (Erythema induratum).

in an oil or ointment is of value. Ointments containing 1–2 per cent. ichthyol may also help, and X-rays may stimulate involution.

Internally parathyroid tablets $\frac{1}{10}$ gr. thrice daily, and calcium lactate may be administered. If ulceration occurs, dress with iodoform crystals, and a mildly stimulating ointment, *e.g.* Ung. Hydrarg. \mathfrak{z} i. in \mathfrak{z} i. of soft paraffin.

Papulo-necrotic tuberculides

Barthélemy has distinguished two varieties of necrotic tubercular papules under the titles of *Acnitis* and *Folliclis*, and it is possible that the rare lesion known as *Granuloma annulare* belongs to the same class, though it never ulcerates (*vide* p. 336).

Acnitis and **Folliclis** both occur in young people, affect both

sexes, and are most often associated with evidences of tuberculosis elsewhere in the body

Acnitis begins in the deeper layers of the cutis, and is met with especially on the face, the sides of the neck, the ears, temples and forehead.

Folliclis begins in the upper layers of the cutis, and affects chiefly the extensor aspect of the limbs, and the back of the hands. It may be met with on the palms (Plate VIII), the soles, and, very rarely, on the genitals and scalp.

In both diseases the lesions appear as small somewhat sharply-defined rounded papules of a bluish or reddish-brown hue. They enlarge and push up the epidermis. Under the epidermic covering a tiny necrotic abscess forms, which ruptures, and its contents dry to form a firmly adherent crust. When the ulcer beneath the crust heals, the crust separates, and a depressed whitish scar is left, sometimes surrounded by a dark edge. The lesions appear in crops, spread over several months, and may recur from year to year.

Histologically, the definitely tubercular character of these lesions has not been proved. Tubercle bacilli have not been found, and animal experiments have been negative; but positive reactions to tuberculin injections have been obtained. These, however, may depend on some definite focus of tuberculosis elsewhere. Marked changes in the blood-vessels near the lesions have, however, been noted constantly, and probably the lesions are due to tubercular toxins acting on the vessel walls.

Treatment should be on general tonic lines. A local application of phenol-camphor may be made once a week; or the lesions may be touched with Liquor Hydrarg. Nit. Acid. occasionally.

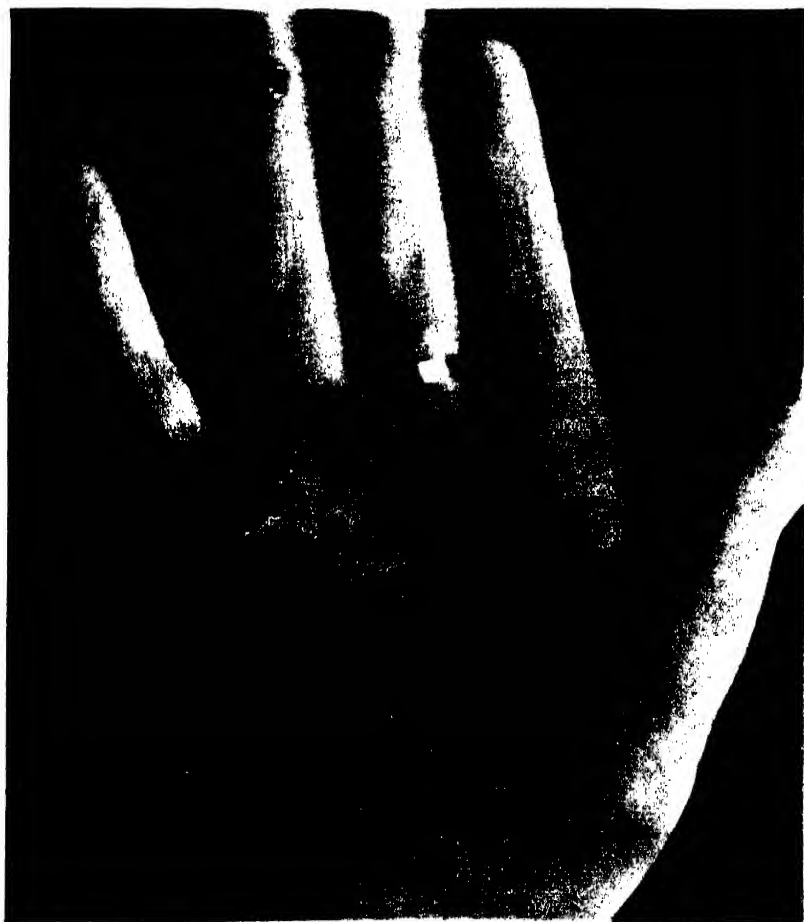
SARCOIDS

Sarcoids are chronic indolent neoplasms developing in the subcutaneous tissue, and believed to be related to tuberculosis. Two chief varieties are described; but both are very rare, and in an experience of twenty-two years I have seen only three cases.

THE SUBCUTANEOUS SARCOID (Darier and Roussy)

This variety is related to tubercular erythema induratum and occurs most often in women between the ages of thirty and forty. The lesions are round or oval nodes, nodules or flat infiltrations varying in size from a pea to a walnut. Their site of election is the costal region, but they may occur on the flanks and the scapular region, or elsewhere. The skin over them varies in colour from slatey-grey to violet. They do not break down or ulcerate, and produce no disturbance in general health. Histologically, some of them exhibit a typical tubercular architecture; others, little more than an atypical lymphocytic infiltration. Tubercle bacilli have not been found in them, and animal experiments have proved negative, but some cases give a positive reaction to tuberculin injections. The treatment is on general tonic lines as for other tubercular conditions, with prolonged administration of arsenic by

PLATE VIII



COLLIGLIS

the mouth, or injections of galy, novarsenobillon or neokharsivan intramuscularly.

Darier's sarcoids are believed by some to constitute a connecting link between tubercular erythema induratum and

THE MULTIPLE BENIGN SARCOID OF BOECK

This type of sarcoid occurs in three varieties: (1) the small nodular disseminated; (2) the large nodular grouped; and (3) the diffuse infiltrated variety. In each the lesions are torpid, with a tendency to symmetry of distribution, and a preference for the face, the lobe of the ear, the extensor aspect of the upper extremities, and the scapular region. In the nodular form the lesions are seen as hemispherical growths, varying in size from a pea to a bean, somewhat soft to the touch, and reddish or bluish-red in colour, later becoming yellowish-brown (Fig. 17). Their surface is smooth or slightly scaly, and on diascopic examination, the tissue does not present the typical translucency of the lupus nodule.

All varieties are more common in women than men, and the age of election

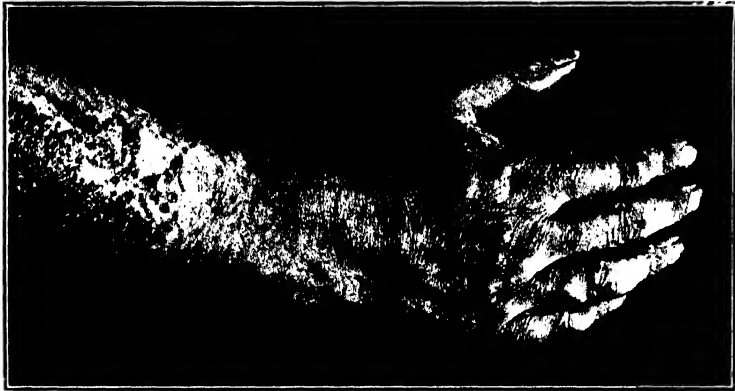


FIG. 17.—Multiple benign sarcoid. Note the lupus on the forearm and the large grouped nodules on the back of the hand.

is fifteen to forty. The condition may last for years. The lesions do not ulcerate, but if they disappear sometimes leave atrophic scars. Recurrences are common round the scars. There is generally some disturbance of health, *e.g.* anæmia, and loss of flesh. Frequently the patients have tuberculosis of the lungs or glands.

Histologically, the lesions are seen to consist of masses of granulation tissue with epithelioid, and sometimes giant cells. Treatment is on general lines. Injections of arsenic, *e.g.* galy, etc., calomel, and tuberculin have all been recommended.

LUPUS PERNIO; CHILBLAIN LUPUS

In this condition the lesions consist of livid red patches on the skin, occurring chiefly on the face, nose, ears, hands, and feet. The lesions are usually symmetrical, and on close examination are found to consist of small or large indefinitely circumscribed or diffuse infiltrations, sometimes resistant, sometimes soft to the touch, and usually sensitive to pressure.

The affected parts are swollen, and the swelling of the fingers gives them a sausage-like appearance. On the surface of the lesions dilated veins are often visible, and on diascopic examination one may be able to make out stippled brownish-yellow points like lupus nodules.

Unlike the true chilblain, lupus pernio seems to be independent of the cold weather, and persists through the summer. It is often found in association with true lupus vulgaris.

Histologically, the tissues show evidences of passive hyperæmia, with circumscribed collections of epithelioid and round cells. Giant cells are rare, but have been found. Tubercle bacilli have not been seen, and tuberculin reactions and animal experiments have been negative.

Probably the condition is a toxi-tuberculide.

Treatment.—General, as for other varieties of tubercular lesion. Arsenic and tuberculin injections may be tried. Calcium lactate, grs. xv. thrice daily, and parathyroid substance, $\frac{1}{10}$ grain night and morning, may also be administered. The local applications of X-rays has sometimes proved beneficial.

In a later chapter certain diseases of the skin which are now believed to depend upon what are known as focal infections will be dealt with. Here, for the sake of clearness, it may be stated that all the tuberculides depend upon a focal infection; that is to say, they are secondary and subsidiary to a primary tubercular lesion elsewhere in the body. They might reasonably have been included in Chapter X, which deals with some focal infections, but instead I have appended their description to the account of the primary tubercular diseases of the skin, because their relationship to the tubercle bacillus is generally accepted, though not, in all cases, definitely proved.

Some authorities continue to group Lupus erythematosus with the tubercular affections. This has led to great confusion among students in the past. Lupus erythematosus—especially the disseminated form—has sometimes been met with in tubercular patients, as has also the chronic fixed discoid type. But recent research has shown that Lupus erythematosus may be due to some other focal condition than a tubercular one. It may be due to tubercular toxins, but a considerable body of evidence is accumulating to prove that it may also be produced by other toxins. I am therefore dealing with it in Chapter X. among other focal infections.

Before leaving the tubercular infections of the skin, it may be useful to mention briefly the various tuberculin tests.

1. **Tubercular Injection Test.**—Keep patient in bed and record his temperature two-hourly for 24 hours. Then inject subcutaneously $\frac{1}{10}$ mgm. of Koch's old tuberculin. If the temperature rises 1° F. in 24 hours, the reaction is positive. If there is no reaction, an injection of $\frac{1}{3}$ mgm. of tuberculin may be given after three days. Besides the rise of temperature look for a change in the lesions, which, in a positive case, react with erythema and swelling.

2. **Von Pirquet's Test.**—Vaccinate the patient with a 25 per cent.

solution of old tuberculin. Scarify a similar area on the other arm as a control, but do not apply tuberculin. A positive reaction is an erythema appearing at the site of vaccination in a few hours, which next day becomes a reddish papule, and gradually fades, leaving some transient scaliness.

My experience of **Moro's Test**—inunction with tuberculin ointment—has not been satisfactory; and **Calmette's Test**—the instillation of old tuberculin into the eye—has been given up because of its dangers.

Leprosy

(Lepra; Elephantiasis Græcorum; Lepra Arabum)

Leprosy is nowadays rarely seen in this country except in the imported case. From the eleventh to the sixteenth century, however, it was widely distributed throughout Great Britain, as well as all over Europe. Of this we have surviving evidences in such place-names as Liberton (leper-town), and in the "leper-windows" still to be seen in many of our old churches. In the light of modern knowledge, however, it is probable that in mediæval times many unfortunate sufferers from lupus, syphilis, scabies, and such relatively innocuous diseases as psoriasis and leucoderma, were confused with lepers, and doomed to a life of miserable seclusion and ostracism.

The disease still exists in Europe—in Norway, Iceland, the Crimea, Southern Italy, Turkey, and here and there along the Mediterranean coast on the European side. There is, also, a small colony of lepers near Memel. It is very prevalent in India, Persia and China, certain parts of Africa, South America, and the islands of Oceania.

Etiology.—The disease is caused by the *bacillus lepræ* of Hansen—a rod-like organism, very like the tubercle bacillus, and half the diameter of a red blood-corpuscle in length. The bacilli stain readily by Gram's method. They stain more easily with basic aniline dyes than the tubercle bacillus, but are less acid-fast. They are non-motile. They are found in enormous numbers in the lesions, in recent cases, especially of the tubercular form of leprosy, most often in bundles inside the cells. They also occur in the endothelial cells and the walls of the blood-vessels, in the hair follicles and glands of the skin, lying free in the lymph spaces, and often, if the nose is affected, in the nasal secretions.

In spite of the discovery of the lepra bacillus, until recent years other factors were suggested as playing a part in the etiology. Climatic conditions have been blamed, and the late Sir Jonathan Hutchinson evolved and championed for many years a theory that the disease was caused by the consumption of decaying fish. The disease is contagious—though, except in ulcerating cases, with free discharge of bacilli, I do not believe it to be much more contagious than lupus, in temperate climates at least. Contagion may be direct or mediate. It is not

hereditary, though the children of lepers often acquire it from contagion. Rodriguez has calculated that the average period of incubation among the segregated and unsegregated children of lepers is three years and nine months. Sir Leonard Rogers believes that the ordinary mode of infection is through an abrasion in the skin, or mucous membranes, and he suggests that infection may occur from insect bites. The disease has been accidentally acquired by doctors who had pricked their hand while operating on a leper.

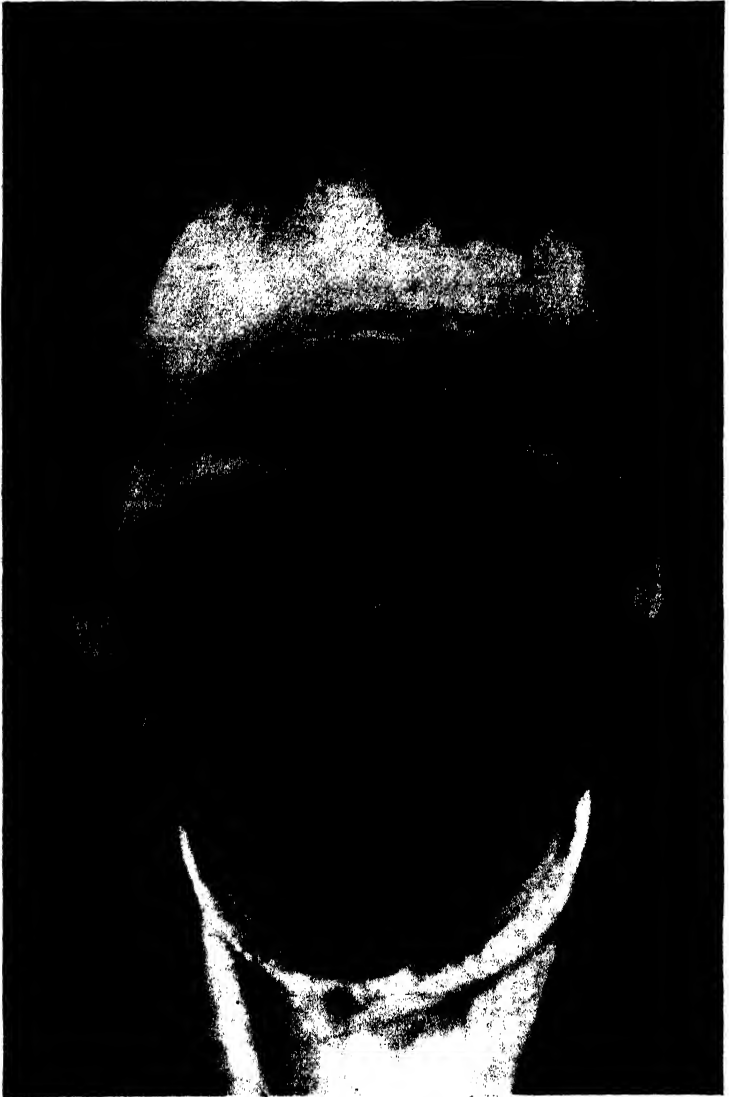
Symptoms and Course.—There are two varieties of the disease : *Lepra tuberosa* and *Lepra maculo-anæsthetica*. The latter usually occurs alone as a definite entity ; while *Lepra tuberosa* in its later stages is often complicated by nerve symptoms (*Lepra mixta*).

LEPRA TUBEROSA or TUBERCULAR LEPROSY is characterised by the development of large nodules in the skin and mucous membranes ; *Lepra anæsthetica* by involvement of the peripheral nerves, and alterations in cutaneous sensibility. Either variety of the disease may affect both sexes. Leprosy is not common under the age of ten years, though I have seen it in a boy of eight. It usually begins between the ages of ten and thirty, though it may be acquired later.

In both types there is a prodromal stage characterised by loss of appetite, depression, weakness, pains in the back and joints, somnolence, and some febrile disturbance. To these symptoms Darier adds a greyish discoloration of the skin of the extremities, obstinate attacks of coryza, or an abnormal dryness of the nasal mucosa with repeated attacks of spontaneous epistaxis. These symptoms, which are due to the invasion of the system by the *lepra bacillus*, may last for an indefinite time, but are followed in due course by the first eruption—the *exanthema lepræ*—the macular stage (*lepra maculosa*) of the disease. The macular stage is characterised by an eruption of reddish plaques of varying size, some of which disappear while others become indurated and raised above the skin surface. These lesions may appear anywhere on the skin, but their commonest sites are the face and extremities. With the efflorescence of the eruption the patient's general condition usually improves. After a time the vivid red colour of the lesions subsides, and is replaced by a dirty brownish hue, and often there is some superficial scaling. The exanthema tends to spread slowly, some of the lesions undergoing central involution, so that ring-shaped or gyrate figures may be produced. Some lesions disappear completely, leaving pigmented or depigmented atrophic scars.

Sometimes all the lesions of the exanthematous stage disappear spontaneously, only to break out afresh after an interval. *Lepra tuberosa* develops in the train of these preliminary manifestations. Nodular infiltrations of a dark or reddish-brown earthen colour appear on the sites of the exanthematous eruption, or upon hitherto normal

PLATE IX



LEPRA TUBEROSA

Note the leonine face

areas of the skin. These nodes have a predilection for the face—especially the forehead—and the extensor aspects of the limbs, but they may occur anywhere except on the scalp, the palms, or the soles. In a well-marked case this tuberoso infiltration of the face produces characteristic changes in the appearance. The forehead, especially over the eyebrows, is bossy and nodular; the eyebrows shed their hair; the cheeks, infiltrated and heavy-looking, sag downwards; the lips become thickened and coarse; the nose becomes clublike, and the countenance assumes a leonine aspect (Plate IX).

Like lupus, leprosy is an indolent disease, the nodules enlarging slowly and progressively through a period of years; but sometimes indulging in spasms of more rapid growth with some pyrexia and the outbreak of fresh lesions. Sometimes the nodules break down into indolent ulcers which have little tendency to heal.

The disease may spread to the mucous membranes. The conjunctiva may become involved, the cornea may be infiltrated (*pannus lepræ*) and perforated. The mucosa of mouth and nose may be affected—nodules forming, or chronic ulcers with an infiltrated base developing. The disease may spread to the larynx—when the voice becomes hoarse, and breathing and swallowing are rendered difficult and painful. The laryngeal cartilages may be shed as sequestra.

Leprosy affects internal organs as well as the skin, and in long-standing cases, the liver, lungs, spleen, kidneys, brain, spinal cord, testicles and ovaries may all be attacked.

In all cases of leprosy there is early and considerable enlargement of the lymph glands draining the affected area of the skin.

LEPRA MACULO-ANÆSTHETICA or LEPRA NERVORUM has the same prodromal symptoms as lepra tuberosa. After a somewhat longer prodromal stage there develops suddenly, usually on the extremities, a moderately large bulla (*Pemphigus leprosus*). As a rule it is solitary, though there may be more than one. The bulla ruptures, exposing a moist raw surface which slowly heals over, leaving a pigmented or depigmented more or less anæsthetic scar. The bulla is of neurotrophic origin similar to the trophic vesiculation of the skin that may follow injury to a sensory nerve. This process of bullous formation may occur at intervals on different parts of the body through a period of years, but tends to get less frequent as the disease becomes more chronic; or instead of bullous eruptions there may be an outbreak of hyperæsthetic reddish macules which sometimes disappear without trace, or at other times leave pigmented areas behind (Fig. 18). Hyperæsthesia and paræsthesia sometimes precede the anæsthesia which is the most characteristic symptom of this form of leprosy. The anæsthesia may be confined to small irregular discrete areas of the skin, or it may involve the greater part of the skin surface. Temperature-sense

disappears first ; then pain-sense, and touch-sense last. It is usually possible to feel the affected nerves in the immediate neighbourhood of these anæsthetic areas as hard cord-like thickened structures—at first sensitive, but later becoming completely insensitive.

Trophic ulcerations, or ulcerations started by slight injuries, may occur on the affected skin. This ulceration is slow, but it may be



Photo by Dr. Oram.

FIG. 18.—Maculo-anæsthetic leprosy.

deep, and it may lead to serious mutilation, *e.g.* the loss of a finger or toe, or even of the whole hand or foot (*Lepra mutilans*).

Together with the sensory disturbances there are neurotrophic changes in the muscles. On the face this produces a wooden expression. If the interossei are affected a condition of claw-hand may develop. The course of leprosy in both forms is slow, but relentless, and the inevitable end is death. It may, however, last for many

years, mutilating the sufferer terribly, and ultimately killing by involving some organ necessary for life. Or death may occur in consequence of some intercurrent disease, *e.g.* phthisis, pneumonia, sepsis, etc.

Histo-pathology.—The disease begins in the corium, but spreads to the surface and the subcutaneous tissue. The nodes consist of epithelioid and lepra cells—large cells packed with bacilli.

In nerve leprosy the peripheral nerves are affected by an ascending neuritis which begins in the nerve-endings in the cutis. Bacilli are found in the nerves and nerve ganglia.

Diagnosis.—Once seen, leprosy is not easily forgotten. In making a diagnosis of leprosy remember that it is not indigenous in this country, and that it occurs only among people who have lived in leprosy regions or been in contact with lepers.

Lepra tuberosa may be confused with *lupus* and *syphilis*. But the leonine countenance of lepra is most characteristic; its nodules are larger, harder, and lack the translucency of lupus nodules, and the lepra bacillus is easily found in a section.

Syphilis is more rapidly destructive than lepra; and evidences of syphilis may be discovered elsewhere on the body. In a doubtful case the Wassermann reaction is of little use, as leprosy may give a positive result.

Confusion may also arise between *syringo-myelia* and anæsthetic leprosy—but in syringo-myelia there is no anæsthesia as in leprosy, but a loss of the sensory impressions of pain and temperature.

In all suspected cases of leprosy Hansen's bacillus should be looked for in sections. It is not hard to find.

Prognosis.—This is always grave, but an amelioration of symptoms and a retardation of the progress of the disease may be brought about by treatment, and by the improvement of the general conditions of life. In countries where meat is a staple article of diet, and where the temperature is moderate, lepers sometimes do well. The rice-eating leper has a low resistance.

Treatment.—For the sake of the community, lepers should be strictly isolated. In all cases try to improve the patient's condition of life. Good food and strict cleanliness are essential.

Many remedies have been tried. Unna has seen the lesions disappear from a patient treated with ichthyol internally and resorcin and chrysarobin externally. Cawston has employed intramuscular injections of Oppenheimer's colloidal antimony in daily doses of 1-4 c.c., and reports improvement. X-rays and radium treatment have been tried, but the results were not encouraging.

Gurjun oil has been administered, and improvements have been observed, but much greater reliance may be placed on chaulmoogra oil, provided it is made from the seed of the true chaulmoogra and not from the false chaulmoogra. Researches prosecuted by Sir

Leonard Rogers, and others, have evolved refined products in the form of soluble preparations of the unsaturated fatty acids of chaulmoogra, soya bean, and other oils. Sodium chaulmoograte has given very good results in his hands. Chaulmoogra oil and its derivatives produce leucocytosis which brings about destruction of the bacilli. A mixture of the esters of acids of the chaulmoogra group is procurable under the name of Moogrol (B.W. & Co.). The dosage is 1 c.c. administered intramuscularly, and increased gradually till from 2 c.c. to 6 c.c. is administered once a week.

Treatment with Vaccines.—Deycke prepared a vaccine called Nastin from a streptothrix found in leprous tissue. He claims to have had good results. In one case in which I tried it the results were nil. Rost makes a vaccine called Leprolin from the lepra bacillus. He claims some successes from its use, and Sir Norman Walker reports great improvement in one case treated by weekly injections of a vaccine prepared from germs found in a lepra nodule.

Recently strong claims have been made by Hasson, and others who have used his vaccine, which is prepared in a somewhat unusual way. He produces a blister over a leproid patch by the application of CO₂ snow. The blisters are emptied about thirty-six hours afterwards, and are found to contain a strong solution of lepra bacilli. To the serum containing these bacilli, a mixed culture of *B. pyocyaneus* is added; the whole is centrifuged; distilled water is added; the bacilli are counted, and the vaccine is then put up in ampoules containing 2 c.c. and inactivated by heat. Each 2 c.c. contains approximately 15,000 million Hansen's bacilli. The vaccine must be at least fifty days old before it is used. It is administered intravenously or subcutaneously. Intravenous injections produce a violent reaction. Hasson claims that patients treated with this vaccine had not relapsed in a period of eighteen months.

It would appear that a ray of hope is now offered to the leper. But in estimating improvement we must not forget that large leprous infiltrations may clear up spontaneously without breaking down, and, in the light of past experience one must not be too ready to ascribe ameliorations entirely to treatment. Leprosy is a disease which tends to burn itself out. Few patients actually die of leprosy: they die of some intercurrent malady to which the destructive activities of the lepra bacillus have rendered them more liable. In spite, however, of all recent progress in the treatment of the disease, one must wait longer before one can state definitely that leprosy is, except in rare cases, curable.

Anthrax—²Malignant Pustule

Anthrax, which manifests itself in the skin as "malignant pustule," is due to *Bacillus anthracis*, the largest pathological organism known.

It is rod-shaped, non-flagellated, and produces spores with a very high resistance. It grows aerobically at blood heat and liquefies gelatine. It is 5–20 μ long, and 1–1½ μ broad.

Malignant pustule is met with chiefly on the neck, face, hands, arms, and shoulders of workers among hides or sheep-skins. Recently several cases of malignant pustule have occurred on the face in this country through the use of infected shaving brushes from Japan. After a very short incubation period, usually a few hours, rarely more than three days, there appears at the site of inoculation a vesicle, which rapidly develops into the ripe pustule. This consists of a central, black, sunken slough surrounded by a violently inflamed infiltrated zone on which is set a ring of tense vesicles. An intense and extensive œdema is often present. The lymphatic glands which drain the area are all enlarged, and there is usually great systemic disturbance with high temperature and quickened pulse rate. General septicæmia rapidly ensues, and death follows in a few days.

Diagnosis.—In all cases of suspected malignant pustule make sure that the patient is not suffering from an accidental inoculation with calf-lymph, or from a vaccination pustule on a child's arm. A vaccine infection may closely simulate malignant pustule, but (1) the central black slough is not so adherent; (2) systemic disturbance is almost nil; and (3) no anthrax bacilli are found on microscopical examination. To confirm the diagnosis of malignant pustule examine the contents of the vesicles for bacillus anthracis, or inoculate a mouse with their contents.* The animal dies in forty-eight hours. If killed earlier, anthrax bacilli will be found in its spleen.

Prognosis.—Always grave; but a skin infection with *B. anthracis* is the least serious form of anthrax. The prognosis is less grave if the disease is on the hands or arms than it is if on the face or neck.

Treatment.—Early diagnosis, and early free excision with injections of Slavo's serum offer the best hope. The injections should be of 30 c.c. each, administered subcutaneously and repeated in twenty-four hours if need be; or in very severe cases 10 c.c. may be injected intravenously and repeated after two or three hours if necessary. Quinine and calomel have also been recommended. Diet should be light but nourishing.

GLANDERS OR FARCY

A rare disease among human beings, due to a local inoculation with the Schütz-Löffler bacillus—the *B. mallei*. It occurs among men who have to do with horses. In from 3–5 days after local inoculation a papule or pustule appears, which soon breaks down into an irregular ulcer, with undermined edges and no tendency to spontaneous healing. Papules or pustules may appear on the mucous membranes. The regional lymph glands enlarge early. There are frequently metastases to the joints, the nose and the laryngeal

* For this a licence is required.

mucosa. If the nose is involved there is a copious discharge of thin foul-smelling pus. The "farcy buds" are cutaneous and subcutaneous nodules occurring in the course of the disease, which break down and discharge. There is grave constitutional disturbance, with high temperature, pains in the joints, and great prostration. Acute cases almost all die. Chronic slow-spreading cases recover in the proportion of 50 per cent.

Treatment.—In the acute type, excise the lesions freely, or destroy them with the thermo-cautery as soon as the diagnosis is confirmed by microscopical examination. Injections of $\frac{1}{20}/\frac{1}{10}$ c.c. mallein may be administered. They do good in the chronic type. The general symptoms should be treated on general lines.

DIPHThERIA OF SKIN

Before the days of diphtheria anti-toxin, when tracheotomy was more frequently performed than it now is, a diphtheritic membrane forming on the edges of the tracheotomy wound was a not uncommon sight. Now infection of the skin with the Klebs-Löffler bacillus is rarely seen. In twenty-two years I have seen only three cases, originating on two occasions in wounds, and once upon the face subsequent to an extensive impetigo. During the recent war, in certain areas, there were sporadic outbreaks of diphtheria of the skin.

The affected area is covered with a dirty greyish-red adherent membrane—often resembling sodden and soiled chamois-leather. The nearest lymphatic glands are enlarged. There may be considerable systemic disturbance, but the skin does not absorb so readily as the mucous membrane, so it is rare to see such prostration, etc., as accompanies faucial diphtheria.

Nurses dressing such a case may readily become infected with faucial diphtheria. Cutaneous diphtheria may be followed by paralysis. Diphtheria may be met with on the genitals, vulva, and anal regions of young children.

Diagnosis.—This can usually be made from clinical observation, but it should be verified by microscopical and cultural tests.

Prognosis.—This is usually favourable.

Treatment.—**Local:** antiseptic compresses; **General:** treatment by injections of anti-toxin.

RHINOSCLEROMA

This is another rare bacillary disease, infectious in character but chronic in course. It is due to an ovoid capsulated bacillus very like the pneumonia bacillus of Friedländer, from which it cannot be distinguished microscopically or culturally. The disease affects the nose and upper lip, and may spread to the pharynx and larynx. There is a tense infiltration of the affected parts, with small cells, hyaline and colloid cells, till the parts become hard as ivory. The lesions begin as reddish nodules in the anterior nares, or skin surface of the nose or upper lip, which grow slowly and coalesce to form plaques which may block up the nasal orifices, the naso-pharynx or the larynx. Progress is slow, the lesions are painless, and do not break down, and the general condition remains good. The chief trouble arises from mechanical blocking of the air passages.

Prognosis.—This is unfavourable. The disease may last for many years—twenty to thirty—and terminate in pulmonary complications which bring about death.

Treatment.—Excision has been tried ; but it is unsuccessful as the growths reappear rapidly. If the nostrils can be kept open by mechanical means there is little need to attempt surgical interference. X-rays and radium may be tried. In some cases, through blockage of the laryngeal opening, tracheotomy may be required.

Ulcus molle or **soft chancre** due to the *strepto-bacillus of Ducrey* is, for purposes of convenience, dealt with in the section on Syphilis, p. 90.

CHAPTER V

MICROBIC DISEASES (*continued*): DISEASES DUE TO PROTOZOA

Syphilis

SYPHILIS is a systemic infection, with cutaneous manifestations, produced by the *Spironema pallidum*. Infection is acquired by direct or mediate contact, or by heredity. The disease may affect all the organs and tissues of the body and may declare itself by recurrences or "reminders" over a long period of years. One of the three chief killing diseases, syphilis is the great simulator and the great deceiver. Its cutaneous manifestations may closely resemble many perfectly innocent affections of the skin; and its long periods of quiescence, during which there is no outward evidence of the plague within the body, give to a sufferer an unwarranted sense of security, deceiving him into the belief that he is cured, the while the spironema, at work in some vital organ like the brain, is compassing his premature death.

Etiology.—The cause of syphilis is the *treponema* or *spironema pallidum*, discovered by Fritz Schaudinn in 1905. When examined by dark ground illumination in a fresh specimen of serum from a syphilitic sore, the organism presents the following characteristics. It is a fine, dead-white or silvery spirillum 5–25 μ in length, pointed at each end. Its spirals are close set, regular and helicoidal, numbering from 5–20, and are so fine that a red blood-corpuscle can cover seven of them. The spironema is motile, and its movements are of four kinds: (1) progression—which is, as a rule, slow; (2) a rolling rotatory movement on its long axis; (3) a movement of contraction and expansion whereby its spirals are narrowed or broadened; and (4) bending, so that one half may be at an acute angle to the other, or so that it forms a circle.

It retains its helicoidal spirals while at rest, and even after death, though, as its vitality ebbs, the spirals tend to broaden out. In the unstained specimen no flagella are visible, but in stained specimens a flagellum has been seen at either end.

Confusion may arise with other spironemes, *e.g.* *Sp. refringens*, *gracilis*, and *balanitidis*, or, in specimens from the mouth, with *Sp.*

dentium. For the differential characters of these spironemes the reader is referred to any modern text-book on bacteriology.

To avoid possible confusion with these organisms it is advisable, whenever possible, to take serum for examination from a lesion at a distance from the genitals or the mouth. In primary syphilis, however, this is impossible, unless the chancre is extragenital. Unless one has had a good training in the recognition of the spironema it is better to send a specimen of serum to a laboratory, with a careful statement of its precise source and the time of its collection, rather than rely upon one's own judgment.

HOW TO COLLECT SERUM FOR EXAMINATION

(a) **From a primary sore.**—Cleanse the sore with sterile water or saline on a piece of lint; then abrade *the edge* of the sore either by rough friction with the lint, or with a scalpel. Swab the abraded surface with lint soaked in methylated spirit. In a few moments there will be a considerable outflow of serum. The first to escape is usually blood-stained. This should be wiped off. The next serum to escape, which may be encouraged to flow if need be by gentle pressure with gloved fingers, is rosy in colour. Collect this in fine capillary tubes, and seal the tubes carefully at both ends before sending them to the laboratory.

(b) **From condylomata and moist papules.**—These lesions are rich in spironemata, and serum is easily procured from them by applying a little spirit after cleansing their surface.

(c) **From papules on the trunk.**—Papules on the body are lesions of election from which to procure serum, as any *spironema* found in juice derived from them is practically certain to be *pallidum*. Serum is obtained by gently scraping the papule till its surface is broken. The flow may be stimulated by the application of spirit, or by suction with a small Bier's cup; or, if that is not available, by Harrison's test-tube method. The mouth of an ordinary test-tube is smeared with vaseline, its blind end and about one-third of its length is heated in a spirit flame, and the mouth of the tube is immediately applied firmly to the skin so as to surround the papule. As the test-tube cools the pressure within it diminishes, the papule is "cupped," and serum begins to exude from it.

(d) **From an enlarged gland.**—For this, Mill's method is the best. The gland is fixed and a needle of medium bore is inserted into its centre, parallel to its long axis. A few minims of sterile saline are injected into the gland, the needle is withdrawn, and the gland massaged. The needle is then re-inserted, and as much of the fluid as possible is withdrawn, and in many cases it is found to contain spironemes.

A positive report, *i.e.* a report that the *Sp. pallidum* is present,

means that the patient has syphilis. A negative report is not of itself absolute proof of the absence of syphilis, for a negative report may be given about serum derived from a true syphilitic sore that has been treated with antiseptics—especially of a mercurial character. Or an old lesion, *e.g.* a secondary “reminder,” may not yield any spirochetes except after repeated examinations; or a mixed infection, *e.g.* when a soft sore masks a developing syphilitic chancre, may also yield a negative report.

In all cases the laboratory report should be weighed carefully along with the clinical findings, and any suspected case as to which a dogmatic expression of opinion is at first impossible should be kept under observation for at least eight weeks.

Method of infection.—The usual mode of infection is by sexual intercourse with an infected person; and here it may be stated that such person need not necessarily present *visible* signs of the disease, though there must be some contact between a broken skin or mucous surface and a focus containing living spirochetes. Metchnikoff proved experimentally that, to be successful, the inoculation of the spirochete must be made “dermo-epidermically.”

The infection may, however, be, and often is, transmitted by other means than sexual congress. A cracked lip may be infected by a kiss; a “hang-nail” on a doctor’s or midwife’s hand may become infected at a confinement; and there are many ways of infection by mediate contact, *e.g.* from a pipe, a glass, a table-utensil, a musical instrument such as a bugle or Jew’s harp, a razor, a toothbrush, a pen or pencil, or from dental forceps. All these, and any other object that has been in contact with syphilitic sores, are capable of transmitting the disease to the innocent, usually by chancres on the lip, tonsils, tongue, or face.

THE SYPHILITIC CHANCRE: HUNTERIAN CHANCRE, OR PRIMARY SYPHILITIC SORE

The period of incubation, *i.e.* the time which elapses between the implantation of the spirochete and the appearance of a visible lesion is, on an average, twenty-one to thirty days. This average period may vary. It may be as short as ten days, or as long as six weeks. Longer periods have been recorded, but they should be regarded with suspicion; the patient may have forgotten dates, or may wilfully be suppressing facts. For practical purposes it is wise to regard every sore on the penis, whatever its initial appearances, as a potential syphilitic chancre, if it develops after ten days from the date of exposure to infection.

From four to ten days after the initial appearance of a chancre the nearest lymphatic gland becomes indolently enlarged. “The chancre and its adjacent enlarged glands are the first evidence of an effort on the part of the economy to localise the infection” (Gougerot).

Sometimes syphilis may occur without the visible appearance of any chancre. For long this possibility was doubted, and it was said that in such cases the chancre was merely concealed, *e.g.* in the urethra. But undoubtedly the spirochæta may, on rare occasions, produce such slight local reactions that the chancre is transient, and escapes notice ; or there may be nothing in the nature of a local reaction at all. In these cases, however, the characteristic shotty enlargement of lymph glands adjacent to the site of inoculation is still met with.

GENERAL CHARACTERS OF THE SYPHILITIC CHANCRE

The primary sore begins as an erythematous spot, soon succeeded by a small rounded superficial papule. It does not exhibit any induration for the first five or seven days, but grows in size for about three weeks, during which it assumes its special characters. When mature it is a round or oval, raised, flat lesion, sometimes slightly ulcerated in the centre, discharging but slightly, sometimes a little blood-stained serum, sometimes a little sero-pus. Its colour is that of fresh muscle tissue ; its base and edges when pressed between the fingers and thumb give a sensation of resilient cartilaginous hardness. As a rule the chancre is single, but it may be multiple. A chancre is not auto-inoculable, and if a patient has two or more they appear almost simultaneously. When fully developed a chancre remains stationary for a time, then begins to retrogress. Some induration may remain at its site for months. Unless it has ulcerated a chancre leaves no scar. In cases treated inefficiently a chancre may recur at its old site years afterwards (*Chancre redoux*).

In men the genital chancre usually occurs on or behind the coronal sulcus, in the region of the frænum, or on the orificial edge of the prepuce. Sometimes it occurs at the urethral orifice, inside the urethra, or on the skin of the penis. In the latter region it often looks like a piece of raw beef-steak, circular or oval in shape and without much induration. In women the chancre often escapes notice. It occurs most often on the labia majora, at the fourchette, or on the labia minora. It is not uncommon on the clitoris and cervix uteri. It is rare on the vaginal walls or in the urethra. In women the characteristic induration is often absent, the chancre appearing as a shallow, flat ulcer, with a greyish base and red edges. A hard chancre is invariably associated with enlargement of adjacent lymphatic glands. So much is this the case that the chancre and the adenitis may well be regarded as constituting together the primary lesion of syphilis.

The adenitis may affect only one gland, or a chain of glands in each groin. The arrangement is characteristic. One gland—probably the first affected—is enlarged to a greater degree than the glands around it. On palpation the enlarged glands are found to be resilient, discrete,

freely movable under the skin, and movable also on the subjacent tissue. Later they become hard and "shotty." They do not suppurate.

EXTRA-GENITAL CHANCRES

All chancres have the same essential characters, but they may be modified by their situation. A word may be said of some varieties. Chancres on the general integument often take the form of ecthymatous sores—circumscribed, isolated, imbedded in the skin, covered with a brownish crust, and usually but slightly indurated.

Chancres on the fingers vary considerably according as the infection is (a) due to a specific inoculation superadded to an already existing simple sore, (b) is the result of a pure infection with the spironema through an abraded epidermis, or (c) is due to a mixed infection (*spironema and pus cocci*) from the first. The chief characters of a syphilitic chancre on the finger (Fig. 20) are indolence, slow but progressive increase in size, shallowness, scanty discharge, comparative painlessness, but *early enlargement of the nearest lymphatic glands*. Induration, which is always looked for and upon which too much reliance may be placed, is frequently very slight—often absent, and always absent if the chancre is due to a mixed infection. These points are of great importance, for doctors and nurses are particularly exposed to digital infections, and it is a matter of extreme importance to make an accurate diagnosis as to the nature of an indolent sore on the fingers as early as possible.

Chancres on the lips (Plate X) are usually most common on the upper lip. They are frequently in the middle line, and form large rounded or oval elevations, superficially ulcerated and covered with a thick dirty-brown crust. There is always early and marked swelling of the adjacent lymphatic glands.

In all syphilitic chancres the one pathognomonic sign is the presence of the spironema, which should always be looked for carefully. The examination should be repeated at least three times, with a negative finding in each case, before a dogmatic opinion that the sore is not specific is given. Only in this way could such chancres as that on the scalp (Fig. 19) and in the nostril (Fig. 21) be recognised as primary sores sufficiently early.

Differential Diagnosis.—A primary chancre may be confused with :—

1. *Ulcus molle* : *Chancroid* : *Soft-sore*. This is due to Ducrey's strepto-bacillus, often reinforced by ordinary pus organisms. Ducrey's bacillus is a short Gram-negative bacillus 1.5μ by 0.5μ , easily stained with methylene blue. Chancroid has generally the following characters. It is usually multiple, for it is auto-inoculable at all stages of its evolution, appears 2-3 days after infection, is definitely ulcerated,

PLATE X



PRIMARY SYPHILITIC SORE ON UPPER LIP

with irregular edges and a soft base. It may not be accompanied by adenitis, but if there is any glandular enlargement it usually involves only one gland, which becomes inflamed and tender, involves the skin over it, which reddens, becomes immobilised by inflammation round it, and may suppurate and break through the skin. The spirochete is absent; Ducrey's bacillus is easily found. Difficult cases are those



Photo by Dr. Gram.

FIG. 19.—Chancre on scalp.



FIG. 20.—Primary syphilitic sore on finger.

in which there has been a simultaneous inoculation with Ducrey's bacillus and the spirochete. Here a sore, obviously a chancroid to begin with, reveals the syphilitic infection as the phenomena, provoked by Ducrey's bacillus, begin to subside.

A good rule to follow is to remember that soft sores are rare, and to suspect that every chancroid may conceal a chancre, and be on the look-out for the earliest definite sign. Pus taken from the surface of

a mixed infection will show Ducrey's bacillus, but no spirochete. For spirochetes one must procure serum *from the abraded edge of the sore*, and even then in mixed infections they are hard to find. And, further, in the early stages of the evolution of a sore the Wassermann test is not reliable.

2. A hard chancre may be confused with *traumatic lesions*. A wound of the frænum of the prepuce in man, or of the vulvo-vaginal orifice, may come under suspicion, but only if it has been irritated into induration by unwise local applications, or has persisted for an undue time. Such traumatic lesions differ from syphilitic chancres in that they are usually painful, irregular or round in shape, tend to be œdematous, do not indurate unless irritated, and tend to heal rapidly under simple cleanliness and mild antiseptics.

3. *Herpes progenitalis* and *herpes of the lip* may be confused with chancre. But herpes of the lips usually follows a cold or other simple



FIG. 21.—Chancre in nostril.

[Photo by Dr. Orton.]

infection. Herpes of the vulva is usually associated with the menstrual periods or with some gastro-intestinal disturbance; herpes of the prepuce or glans penis arises sometimes without discoverable cause, though it may follow the mechanical irritation of sexual congress. All herpetic eruptions are preceded by a sense of fullness, with itching, throbbing, and some pain. The lesions are painful, usually multiple, appear suddenly, and are vesicles which, when ruptured, shed a little yellowish serum. Beneath the vesicles there is slight ulceration, but neither infiltration nor induration. Healing is rapid. There is rarely any associated adenitis, and if present it is usually mono-glandular. In herpes of the vulva the symptoms of pain, throbbing, etc. are usually more marked than in herpes of the glans. Both varieties tend to recur. The best differential guide is the presence or absence of the spirochete; but in most cases it is possible to make a correct diagnosis on clinical grounds.

4. *Scabietic lesions* on the prepuce or glans penis may give rise to confusion, and it must not be forgotten that scabies may be contracted during sexual intercourse, and that a man may acquire itch in this way, and later develop a syphilitic chancre at the site of an old scabietic lesion. For differential diagnosis the points to remember are that scabietic lesions are usually multiple, small, more pointed, more actively inflamed, and more elongated, since they correspond to a "burrow," than the commencing specific lesion. Further, they itch, and are associated with definite signs of scabies elsewhere.

5. *Epithelioma* on lip or penis may be mistaken for syphilis. On the lip, epithelioma is most common in men, and usually affects the lower lip. Chancres of the lip are most common in women, and usually affect the upper lip. Epithelioma grows more slowly than chancre.

On the glans penis, an epithelioma grows, vegetates and ulcerates simultaneously. Old men may acquire chancres, but young men do not often develop epithelioma; therefore the age incidence is important. Epithelioma is stony hard all through, not only at the base like chancre. It bleeds readily on touch, is irregular in shape, often very painful, and discharges a thin fetid pus. Adjacent lymphatic glands enlarge more slowly than in syphilis. The spirochete is not present. Microscopic examination reveals malignancy.

6. In women, simple *erosion of the cervix* may be confused with cervical chancre. But this is velvety and granular, without ulceration or characteristic hardness, and develops slowly. The cervical chancre grows rapidly, and is usually definitely ulcerated.

7. *Carcinoma of the cervix* may be confused with cervical chancre, but it is friable, bleeds very readily, and is associated with a blood-stained foul discharge. The age of the patient should also be a guide, and in the last resort a microscopical examination of a section will reveal the true condition.

The above are the chief conditions likely to be confused with the syphilitic chancre; other minor conditions may occasionally be confused, but the initiate should have little difficulty in distinguishing them. The "acid test" is the discovery of the spirochete.

For the technique of examination of serum by dark ground illumination, by Burri's Indian ink method, or by the various tinctorial methods, the student is referred to his text-book of Bacteriology.

THE SECONDARY STAGE OF SYPHILIS

This, the stage of cutaneous and mucous involvement, follows from 3-4 weeks after the appearance of the chancre, or from 7-10 weeks after exposure to infection. There are exceptional cases in which the appearance of secondary manifestations may be delayed even longer. The time that elapses between the appearance of the

chancre and the cutaneous eruption is called by the French "the period of second incubation." During that period the spirochetes are multiplying in the lymph glands adjacent to the primary sore, and probably undergoing changes which enable them to become viable in the blood-stream. The date when the earliest invasion of the blood-stream occurs is unknown; but in due time an incursion, which amounts to a general septicæmia, though it is rarely accompanied by any noticeable increase of temperature, takes place. During the "period of second incubation," malaise and headache are not infrequent, and sometimes a transient roseolar eruption appears on the chest and back.

From the dermatological point of view the chief features of the secondary stage are (1) the appearance of a generalised cutaneous eruption; (2) special lesions on the mucous membranes; (3) a general adenitis; (4) headaches and "sore throat"; (5) a characteristic thinning of the hair; and (6) at a later stage, especially in women, a peculiar leucoderma of the skin of the neck. The Wassermann reaction becomes positive. As a rule the chancre is still present when the secondary eruption appears.

GENERAL CHARACTERS OF THE SECONDARY ERUPTION

All secondary syphilitic eruptions have certain general characters: (1) they are symmetrically distributed; (2) polymorphic; (3) appear suddenly but develop slowly; (4) are painless and do not itch; (5) are often more palpable than visible; (6) are rounded or oval in form; (7) tend to scale slightly; and (8) in colour are of a reddish-fawn tint, which has been compared to raw ham and to copper.

The late eruptions of the secondary period, or syphilitic "reminders," are lesions occurring after the first year. They have the following general characters: (1) they do not appear as a general eruption, but as grouped local lesions; (2) they tend to be round in form, and are usually grouped in circles or segments of a circle; (3) they are more deep-set than the early secondary lesions, often involving the whole thickness of the skin; (4) they are commonest on the neck or scrotum, the extremities and back.

There are many varieties of secondary syphilitic eruption; roseolar, small papular, large papular, papulo-squamous, papulo-crustaceous, rupioid, frambæiform, etc. Mixed types are almost invariable, and in classifying a syphilitic eruption one applies to it a name applicable to the type of lesion which predominates at the moment (Plate XII, A).

The **roseolar** is the earliest and most common type (Fig. 22). It is the most common type because, besides being a type itself, it is the precursor upon which other types such as the papular eruption develop. It consists of an immense number of round or oval pale-

rose or reddish-fawn macules, distributed symmetrically, more particularly on the trunk and the flexor aspect of the limbs. They do not scale: fade on pressure, and though macular are usually palpable because they are attended by slight infiltration. The eruption is associated with a general adenitis. The enlarged glands are small, "shotty," discrete, and non-adherent; consequently they may be made to move under the fingers. They do not suppurate. For diagnostic purposes



Photo by Dr. Oram.

FIG. 22.—Secondary syphilitic eruption. Roseolar type. Some of the lesions are becoming papular.

the most important glands are those *behind* the sterno-mastoid, and the epitrochlear glands. The Wassermann reaction is usually positive, and the mucous membranes of the mouth and fauces are frequently involved.

Differential diagnosis.—The roseolar syphilide may be confused with (1) *Seborrhæic dermatitis*; (2) *Pityriasis rosea*; (3) *Measles*; (4) *Drug eruptions* due to antipyrin, copaiba, sandalwood-oil, etc.

1. In *Seborrhæic dermatitis* the lesions are of unequal size; many

become confluent and produce polycyclic figures ; the skin is greasy ; the macules are of a brownish or fawn colour in the centre, and are scaly at the edges ; there is no general adenitis, no involvement of the mucosæ, no remains of a chancre, and the Wassermann reaction is negative.

2. In *Pityriasis rosea* the eruption is almost entirely confined to the "vest area," the face, palms, and soles being immune. The lesions are roughly circular and of different sizes. Each has a fawn-coloured centre, often slightly atrophic, surrounded by a rose-pink border upon which one can often make out tiny pin-point vesicles and desquamating scales. The "herald patch" may be discoverable—a large lesion which precedes the general eruption by a week or ten days. There is no general adenitis ; the mucosæ are not involved, and the Wassermann reaction is negative.

3. In *Measles* there is a prodromal stage with fever, conjunctivitis, photophobia, and nasal catarrh. The eruption appears first on the face, and is reddish-pink and blotchy, and fades in a few days. There are no mucous patches, but Koplik's spots are found on the buccal mucosa.

4. *Drug eruptions* can usually be excluded after cross-questioning the patient. They are not attended by a general adenitis ; they do not produce a positive Wassermann reaction, and they rapidly disappear if the drug is stopped.

In all cases where one wishes to exclude syphilis, strip the patient completely and examine thoroughly for a chancre or its remains. Do not attach too great importance to denials of opportunities of infection. A syphilitic lies readily and vigorously.

Here it will be convenient to deal with certain lesions and symptoms associated with the secondary eruption, whatever its type may be.

The Mucous Patch.—The mucous patch is the homologue of the roseola on mucous membranes (Gougerot). Frequently multiple, it occurs most often in the bucco-pharyngeal cavity, behind the lips, in the buccal pouches, on the anterior aspect of the faucial pillars, and near the posterior edge of the soft palate. It is a greyish-white, slightly raised lesion, of varying size, with reddish edges. Its colour is due to its covering of degenerated epithelium, which is usually readily separated from its base, when it leaves a raw, red, slightly oozing surface. Mucous patches are highly contagious, and it is from them that most chancres on the lips are contracted in the act of kissing.

The **condyloma latum** is most often met with on the mucous membrane of the vulva and the muco-cutaneous area round the anus. Condylomata are also frequently found on true skin surfaces, e.g. in the groins, armpits, umbilicus, under the breasts in stout women, and between the toes (Fig. 23). The moisture and warmth

PLATE XI



(b)

Large Papular Secondary Eruption

(a) Primary Sore on lower lip with large

papular secondary eruption

in these regions favour their growth. In a condyloma there is a papillary overgrowth not met with in the mucous patch. It is a raised, flat, raw, moist lesion, of a purple-grey colour, sometimes covered with a slightly adherent pseudo-membranous exudate. Condylomata are highly contagious, and are a frequent source of infection to midwives and accoucheurs.

Headache.—Headache, an occasional concomitant of the stage of "second incubation," is almost always present in the stage of secondary eruption. It is now known to be due to a "roseolar involvement of the meninges." It is due to a mild meningitis, and varies in severity from a dull sense of heaviness to intolerable pain. It is diffuse in character, and worse at night, as the spiro-nema is, like the *filaria sanguinis hominis*, most active



FIG. 23. - Condylomata between the toes.

then. In cases of severe syphilitic headache a lymphocytosis of moderate degree has been found on lumbar puncture.

Alopecia.—The loss of hair in secondary syphilis is constant, but varies in severity. Some patients are unaware of it; in others it is so marked that all can see it. It usually appears from 3-6 months after infection, and is generally confined to the scalp. It is diffuse—for the actually denuded spots are the sites of roseolar macules; but in addition there is a general thinning of the hair, so that one might imagine that the scalp had been combed roughly with a "curry-comb." It is a temporary phenomenon, and gets well under general anti-specific treatment.

Iritis.—In syphilitic iritis occurring in the secondary stage both eyes usually suffer, and there is pain, photophobia, and lachrymation. Posterior synechiæ form early. In contradistinction to gonorrhœal iritis which tends to recur, and recur again, syphilitic iritis usually occurs only once.

Leucoderma of the Neck.—In some patients, more particularly in women, a peculiar scattered leucoderma appears on the neck during the first year after infection. In arrangement it sometimes suggests

a pearl necklace. The condition usually persists for many months, and may become permanent. At one time this leucodermia was believed to be pathognomonic of syphilis, but that opinion is no longer held. Probably the syphilitics who develop it have some functional irregularity of the suprarenal glands.

General Disturbances of Health in Secondary Syphilis.—

As syphilis is a systemic disease due to a parasitic invasion it is natural to expect some disturbance of general health. There is always some anæmia, which, however, yields to anti-syphilitic treatment. Sometimes there is slight loss of weight, with muscular weakness and slight cachexia. Frequently there is some neurasthenia. Sometimes there are slight recurring febrile attacks due, probably, to fresh pullulations of the spirochæta. But often the general disturbance of health is slight, and most sufferers are able to pursue their usual avocations.

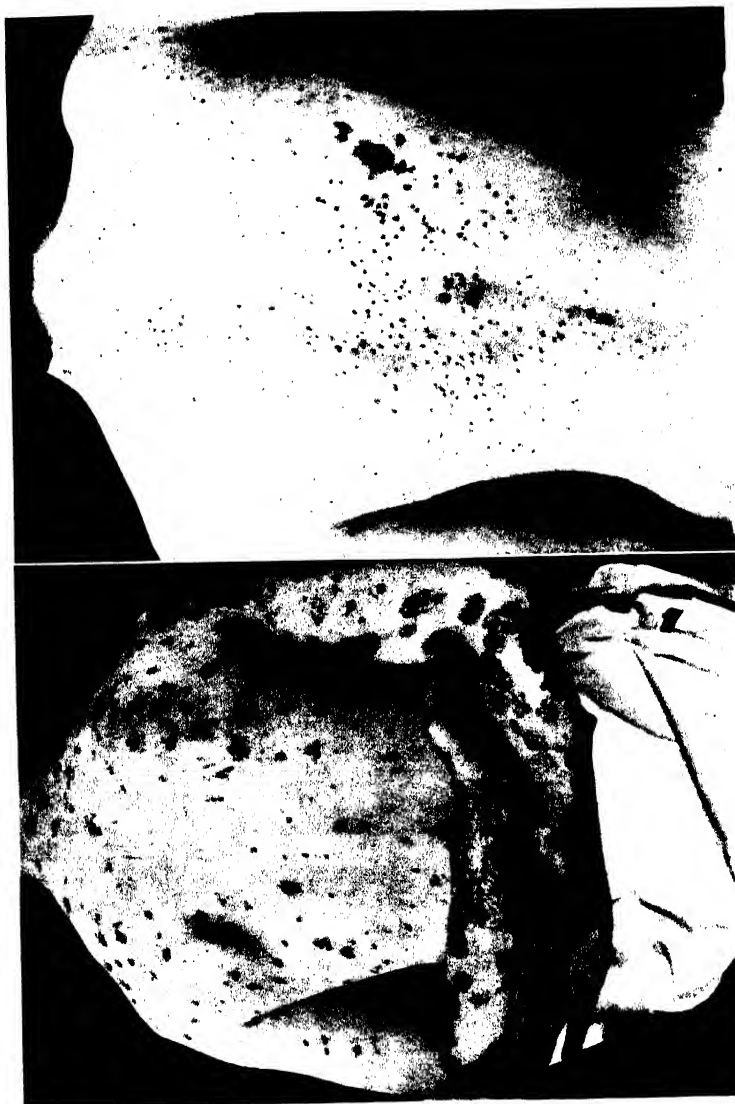
We have already described the roseolar secondary eruption. It remains to say something of the other most common types. Next to the roseolar exanthema the most frequent is :

1. **The Papular Eruption.**—This consists of an eruption of papules varying in size from a pin's head to a pea (*small papular eruption*—Plate XII, B), or from a shirt-button to a shilling (*large papular eruption*—Plate XI, A and B). The lesions, which are due to a localised hyperæmia with infiltration of the papillary layer of the skin, are round, oval, definitely margined, and of a reddish or reddish-brown colour. They are smooth to the touch, unless the horny layer of the skin has participated in the inflammatory process, in which case they are capped with a somewhat adherent scale, and constitute a sub-variety, the *papulo-squamous* eruption. On palpation the papules are found to be hard and resistant, but elastic. The eruption is most marked upon the back, the extremities, especially near the flexures, on the forehead just outside the hair margin (constituting the so-called *corona veneris*) and is not infrequently met with on the face. It is often mixed up with roseolar lesions—for syphilitic eruptions are very definitely polymorphic.

It should not be forgotten that condylomata are syphilitic papules modified by the warmth and moisture of their situation.

2. **The papulo-pustular and papulo-crustaceous eruptions** are next in frequency. In these, probably owing to infection with ordinary pus cocci, the tops of some of the papules are capped by a drop of serum which soon becomes a bead of pus, which dries to form a firmly adherent crust. If the crust is removed, a shallow sharp-edged ulcer is revealed. An exaggeration of this process, by which more and more dried pus accumulates, may result in the production of a large conical blackish-grey mass more or less firmly attached to the skin, and presenting the appearance of a limpet clinging to a rock. This is rupia (*syphilis rupioides*). One or more of the papules may undergo this

PLATE XII



(b) Small Papular Syphilitic eruption

(a) Mixed Maculo-papular eruption

Note the corymbose arrangement on right forearm

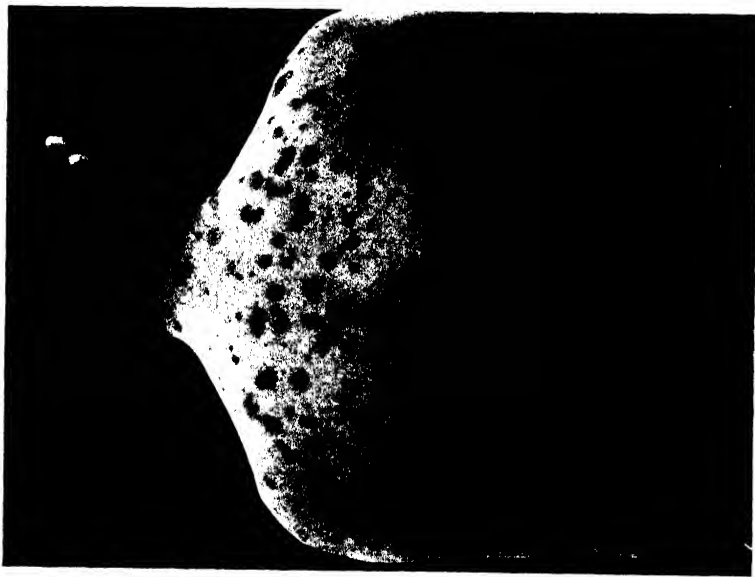


FIG. 24.—Roseolar eruption. Large macules.



FIG. 25.—Papulo-pustular eruption. A few of the papules are becoming pustules.

[Photos by Dr. Oram.]

change, particularly on the face, the neck, the scalp, or the back. But nowadays rupia is much rarer than it used to be. It is very rare as a concomitant of the initial secondary eruption, occurring usually if at all as a late secondary manifestation in ill-nourished neglected patients.

3. The **Frambæiform Eruption**.—A papular syphilide may hypertrophy, exhibiting a papillomatous cauliflower-like overgrowth, moist, and red or reddish-brown in colour (Fig. 26). It suggests frambæsia (framboise=Fr. raspberry). These lesions are usually met with on the face, scalp or neck, either singly or in groups, and yield with remarkable rapidity to salvarsan treatment.



FIG. 26.—Frambæiform syphilide.

These are the commoner of the initial secondary eruptions; but it cannot be too strongly insisted upon that mixed types of eruption are the rule. Further descriptive terms have been applied according to the arrangement of the lesions, *e.g.* **follicular syphilides**, in which the papules are situated in or around the sweat or sebaceous follicles, or the **corymbose eruption**, in which the arrangement of a central papule surrounded by small lichenoid papules or by roscolar satellites suggests the corymb of a flower.

The differential diagnosis of the roseolar eruption from other cutaneous conditions has already been dealt with (p. 95): but the

other types of initial secondary eruption may be confused with various skin rashes. Before proceeding to a systematic differentiation of these, it may be well to indicate some characters of the syphilitic papule.

The **syphilitic papule** is roughly convex, and rises gradually from the surrounding normal skin. It is smooth, or very slightly scaly, and of



FIG. 27. Syphilitic papule.

a reddish-fawn colour. On diascopic examination the blood is driven out of the surface vessels, and the papule is visible as a yellowish-brown stain.

A **psoriasis papule** rises more or less precipitously from the surrounding skin. Its surface is flat, like the top of a table, but it is

FIG. 28.—Psoriasis papule.

covered with several layers of scales which give it an uneven appearance and render it rough to the touch.

An **acne papule** is a conical elevation rising gradually on both



FIG. 29.—Acne papule.

sides from a periphery of reddened skin. Its surface is smooth, but at its apex one can usually detect the open follicle, frequently filled with a bead of pus. Its colour is livid or bluish-red (Figs. 27, 28, and 29, after Kromayer). These points should be remembered, as they will often be found of service.

A papular or papulo-pustular secondary syphilide may simulate *Acne vulgaris*, and it must not be forgotten that both may coexist.

	<i>Acne vulgaris.</i>	Papulo-pustular syphilis.
Distribution.	Face, back, front of chest.	May occur on face, back and chest, but is often found on scalp and extremities.

	Acne vulgaris.	Papulo-pustular syphilis.
Type of lesion.	Mixed ; papules, pustules, abscesses, and even cysts. The whole mixed with blackheads. Inflamed lesions painful, surrounded by inflammatory zone. If suppurating, suppuration is deep and penetrates into sebaceous gland.	Mixed ; but no abscesses, cysts, or blackheads. Inflammation rare. Lesion hard, resilient, painless. Suppuration, if present, very superficial.
Mucous membranes.	Not affected.	Almost always affected.
Glands.	No general adenitis.	General adenitis.
Duration.	Usually prolonged.	Under treatment usually disappears quickly.
Microscopical exam.	No spironemes found.	Spironemes present.
Blood test.	Wassermann negative.	Wassermann positive.

Acne rosacea is easily distinguished by the diffuse redness and capillary engorgement of the affected skin ; by the flushing of the face, and the exacerbation of the lesions after meals, and by their distribution, which is confined to the nose, forehead, chin and cheeks.

Acne varioliformis, confined as it is to the temples, forehead, and scalp, is easily distinguished by the indolent chronic character of its lesions and by its characteristic depressed scars.

The **corona veneris** may be confused with a *seborrhœic dermatitis*, or with *psoriasis* spreading beyond the hair margin of the scalp on to the forehead. But the lesions of seborrhœic dermatitis tend to run into each other, and are not so discrete as the papules of the corona veneris ; and on scraping a psoriatic lesion it will be found covered with laminated scales. Further, in seborrhœa and psoriasis the mucosæ are unaffected, and the blood test is negative.

Scabies has frequently, and disastrously, been confused with secondary syphilis, more particularly when there has been a scabietic lesion on the penis that has suggested a chancre ; and it must never be forgotten that syphilis and scabies may be met with coincidentally.

The generalised itching, worse at night ; the absence of lesions from the face and neck ; the integrity of the mucosæ, and the fact that the occipital and post-cervical glands are not enlarged should enable one to make a correct diagnosis. In scabies, complicated with impetigo or ecthymatous sores from scratching, there may be a widely distributed adenitis ; but the occipital and post-cervical glands remain normal

because scabies does not appear on the scalp, the face, or the neck. In a doubtful case the blood should be examined.

Iodide and bromide eruptions on the scalp or face may produce lesions which closely resemble papulo-pustular syphilides. Here the history is of great value. The absence of a general adenitis; the integrity of the mucosæ, and the result of a blood test should help towards a correct diagnosis.

The small papular syphilide may be confused with *lichen ruber planus*.

	Lichen ruber planus.	Small papular syphilide.
Distribution.	Chiefly on flexor aspect of limbs, front of wrists, forearms; inner side of thigh just above knee; legs. Papules tend to run into plaques.	Chiefly on trunk, especially back, and limbs. No predilection for flexor aspects. Lesions discrete. No tendency to form plaques.
Character of lesions.	Polygonal, angular, flat. Centre sometimes depressed. "Waxy glance." More visible than palpable.	Rounded or acuminate, convex. Slight tendency to scaling. Indurated; definitely palpable.
Colour.	Lilac or dusky red.	Reddish-brown.
Itching.	Always present; often severe.	Absent or only slight.
Course.	Lesions appear in successive crops. Old lesions resolve, leaving brown stains. Duration long.	Lesions come out almost simultaneously. No brown stains on resolution. Yields fairly rapidly to treatment.
Mucous membranes.	Often affected; lesions take form of bluish-white papules, from which epithelium cannot be detached without force.	Lesions take form of mucous patches; pseudo-membrane easily detached from broad raw base.
Glands.	No general adenitis.	General adenitis.
Blood test.	Negative.	Positive.

The general characters of the late eruptions of the secondary period—the syphilitic "reminders"—have already been indicated (p. 96). It is, particularly, in these late eruptions that syphilis reveals itself as the prince of simulators, for many of them closely resemble the lesions of other diseases, and differential diagnosis is beset with difficulties. In arriving at a conclusion, one must be guided by the history, by the impression received from a careful and systematic examination of the lesions, by the presence or absence

of other manifestations of syphilis, the presence or absence of the spirochete (often very difficult to find in late secondary lesions), and by the result of a blood test. Here, however, one must remember that a positive blood test does not determine beyond dispute that any special lesion is syphilitic. The positive test may depend upon an old attack of syphilis with which the lesion under consideration has nothing to do.



[Photo by Dr. Oram.]

FIG. 30.—Circinate syphilide. A rare late secondary form.

The tubercular syphilide and the psoriasiform syphilide are constant sources of confusion.

The nodular cutaneous tuberoses or tubercular syphilides are a late manifestation, and may vary in size from a pea to the area of the palm. If small, it consists of a number of flat, rounded, dusky red nodular infiltrations involving the whole thickness of the skin. While developing, these nodular infiltrations often suggest an incipient boil; but they are indolent, and neither painful nor acutely inflamed. If the tubercular syphilide is large, it consists of a circular, oval or serpiginous

PLATE XIII



(a) THE TUBERCULAR SYPHILIDE



TERTIARY SYPHILIS
(b)

lesion, bordered by a number of confluent nodules which enclose completely or partially a reddish-brown area of skin studded over with scales or superficial cicatrices (Plate XIII, A). Sometimes these tubercular syphilides ulcerate superficially, or deeply enough to involve the whole thickness of the skin. The non-ulcerating and the ulcerating varieties both spread peripherally, fresh nodules being laid down outside the original ones as they clear up or break down. Repair proceeds in the centre almost *pari passu* with the peripheral extension. Frequently these tubercular syphilides are extremely rebellious to treatment (Fig. 31).

Their sites of election are the face and the back. Confusion may



[Photo by Dr. Oram.]

FIG. 31.—Nodular or tubercular syphilide.

readily occur with Lupus vulgaris, but the following points should help to a correct decision :—

	Lupus vulgaris	Ulcerating nodular cutaneous or tubercle syphilide.
Age incidence.	Begins in childhood or adolescence.	Occurs usually in adult life in patients with a history or other signs of syphilis.
Character of lesion.	Begins as a yellowish-brown "apple-jelly" nodule — translucent, tiny, moderately infiltrated ; does not usually begin to ulcerate for months or years.	Begins as a non-translucent brown or copper-brown nodule ; fairly large ; considerable infiltration ; ulcerates easily.

Lupus vulgaris.

Ulcerating nodular cutaneous
or tubercle syphilide.

Character of ulceration.

Begins late, spreads slowly. Ulcers rarely discrete: not punched out, superficial and not usually extensive.

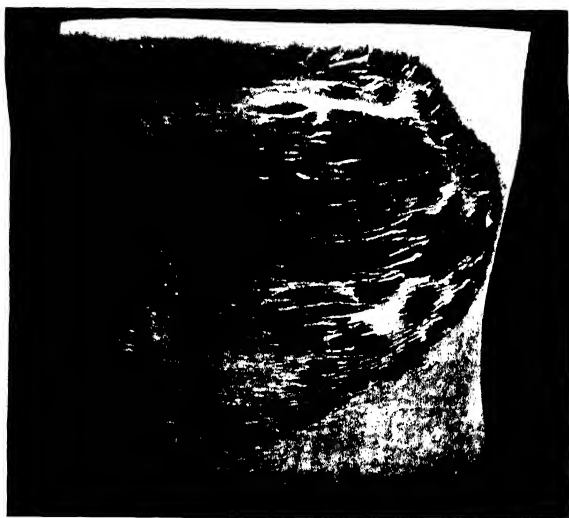
Begins early, spreads rapidly. Ulcers punched out, small circular. May be discrete or become confluent and cover large areas.

Character of scars.

Scars irregular; covered by thin bluish-white skin like cigarette-paper. In lupus scar it is practically the rule to find one or more apple-jelly nodules left behind.

Scars circular or serpiginous, white, brownish-white or copper-tinted. As a rule no syphilitic deposits are left in the scar tissue; but the scars are often peculiar in this, that in the larger cicatrices may be seen small circular depressed scars of individual tubercles.

The **psoriasiform syphilide** may also give rise to considerable confusion, especially if it occurs in the region of the elbows or knees



[Photo by Dr. Oram.]

FIG. 32.—Psoriasiform syphilide over knee-joint.

(Fig. 32), or on the palms or soles (Figs. 33 and 34). In the latter situations so great is the similarity between the two diseases that, by



FIGS. 33 AND 34 — Psoriasisiform syphilides of palms and soles.

an unjustifiable confusion, psoriasis of the palms and soles is sometimes designated "syphilitic psoriasis."

The psoriasiform syphilide is of a dark brownish colour, sometimes tinged with purple-red, and is more infiltrated than ordinary psoriasis. On the palms and soles this form of syphilide assumes the type of scattered or grouped papules of moderate size, definitely infiltrated and hard. They glisten with a reddish-brown or dark brown colour through the stretched epidermis over them. Often there is marked hyperkeratosis, with the formation of thick, tough adherent scales. These lesions often resemble closely the lesions of tertiary syphilis in the same regions, but in secondary syphilis there is a strong tendency to symmetrical distribution, while tertiary syphilis is asymmetrical.

	Psoriasis.	Psoriasiform syphilide.
History.	Usually family history of psoriasis or personal history of previous attacks.	History of syphilis, and possibly signs of the disease elsewhere.
Distribution.	Sites of election : elbows, knees, scalp, lumbosacral region.	May occur anywhere on body. No predilection for extensor aspect of limbs ; scalp usually free.
Character of lesions.	Markedly squamous, with copious micaceous scales on reddish base. Infiltration slight.	Scaling moderate. Scales large and non-micaceous. Dirty white or yellowish in colour. Infiltration considerable.
Result of "gratage."	On gently scraping the lesion scale after scale separates till at last a thin transparent pellicle is exposed. On removing this, a hyperæmic layer, bleeding at a few points, is exposed.	On scraping, the scales are found adherent ; do not separate readily ; are not plentiful ; the last crumbles or comes off like a crust, leaving a raw surface.
Glands.	No general adenitis.	General adenitis.
Nails.	Characteristically pitted or striated.	Unaffected.
Course.	Chronic ; rebellious ; tends to recur. Disappears without leaving scars or pigmentation.	Yields fairly rapidly to anti-specific treatment. Does not tend to recur. Frequently leaves pigmentation or scars.

Before passing from the consideration of secondary syphilis, a word may be said as to syphilitic onychia, and the lesions of secondary syphilis on the tongue.



A scaly syphilide simulating psoriasis of face.



Psoriasis affecting face.

FIGS. 35 AND 36. Syphilis as a simulator.

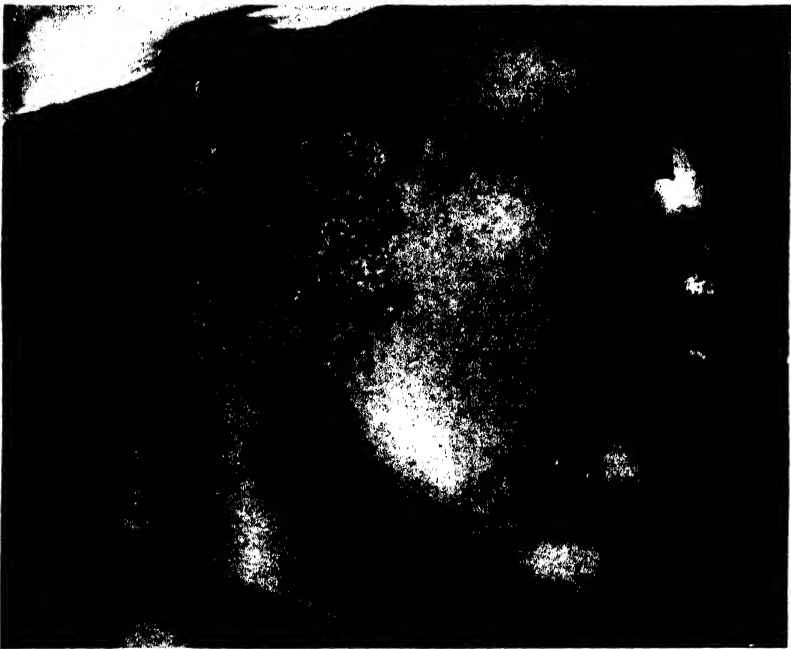
Syphilitic onychia is an acute or subacute inflammation affecting the nail bed and the adjacent skin. There is a dry and a moist form.

The dry form is painless and leads to nutritional changes and often shedding of the nail. The moist form is painful, and suppuration may occur below and along the edge of the nail, causing ultimate separation of the nail.

The dry form is commonest on the fingers; the moist, on the thumb or great toe.

Secondary Syphilis affecting the Tongue.—When the cutaneous roseola is in full efflorescence, small erythematous patches may appear on the tongue.

The mucous patch already described is common on the tongue,



[Photo by Dr. Oram.]

FIG. 37.—Syphilis as a simulator. Late secondary syphilide resembling Lupus vulgaris.

especially along its margin near the root, and at the tip, or on the under surface near the frænum.

Fournier's "smooth patches," significant of a depapillating glossitis, can often be seen. If the tongue is dried, they appear as glistening, circular or poly-cyclic lesions, without evidence of ulceration.

Syphilitic leucoplakia may appear in the late secondary stage or in the tertiary stage. Heavy smokers are particularly prone to this.

The lesions consist of greyish-white, harsh areas of hyperkeratosis, especially on the dorsum of the tongue, and are roughly circular, oval,

or irregular in shape. Usually they produce no symptoms, but if fissured they become painful. They are very rebellious to treatment, and prone to become cancerous.

TERTIARY SYPHILIS

It is difficult to determine at what period syphilis enters its tertiary stage. If a time factor rather than a pathological change is made the criterion, one may say that any lesion appearing after two years from the date of infection is a tertiary lesion. This, the old method of distinction,



[Photo by Dr. Oram.]

FIG. 38.- Broken-down syphilitic gummata (tertiary ulceration).

Note the circular, crescentic, and reniform shapes.

is practical but unscientific. The pathological factor is a better guide, and one may say that syphilis enters upon its tertiary stage with the appearance of the first gumma, serpiginous ulcer, or infiltrated interstitial syphilitic deposit (Plate XIII, B).

GENERAL CHARACTERS OF TERTIARY LESIONS

Tertiary lesions of the skin have certain common characteristics. (1) They tend to be asymmetrical and few in number; (2) they are markedly destructive; (3) they are but slightly contagious, for though the spirochete may be found in them it is never very plentiful; (4)

they leave characteristic scarring ; (5) the Wassermann reaction is usually positive ; (6) they usually yield rapidly to treatment, especially with iodides ; (7) they are usually associated with evidences of syphilis elsewhere, *e.g.* in bones, nervous system, eyes.

The tubercular or tuberoso syphilide already described as a late



FIG. 39.—Scarring left after syphilitic ulceration. Note the shape, the pigmented borders, the pale centre, and the fine tissue-paper skin.

secondary manifestation is classified by some among the early tertiary lesions.

There remains the Gumma, which is accepted by all as the true tertiary lesion.

The **syphilitic gumma** is a true granuloma which may appear

primarily in the skin, or involve the skin by spreading from the sub-jacent bone or organs such as the testicles. It appears in the skin as a painless, rounded, subcutaneous nodule, firm but elastic to the touch, and varying in size from a pea to a walnut. It increases in size, and as it grows towards the surface and the superficial layers of the skin become involved they assume a livid red or dusky red hue. The overlying skin softens, gives way, and a small quantity of gummy purulent fluid is discharged, and a deep sloughing ulcer with sharp-cut, precipitous, but sometimes undermined, edges is left. The base of the ulcer is often covered with a yellowish-green mass of partially disorganised tissue, the so-called "wash-leather slough." Gummata may be single or multiple. If multiple and contiguous they may become confluent in the ulcerating stage, and a large ulcer, usually reniform or semicircular in outline, is formed (Fig. 38).

Unless a gumma is secondarily infected with pus cocci, it is not the rule to find any marked enlargement of adjacent lymphatic glands.

Gummata may appear anywhere on the skin, but common sites are the forehead, the nose, over the sternum and on the extremities, especially the legs.

They may develop on a varicose base—*i.e.* on a limb affected with varicose veins, and be mistaken, unless care is exercised, for varicose ulcers.

A gummatous ulcer, especially if it be secondarily infected with phagedænic organisms, may become extremely destructive, producing great disfigurement and ugly cicatrices. The cicatrices are brownish-white in colour, atrophic, depressed and sometimes adherent; but they do not exhibit that tendency to retraction so marked in lupus scars (Fig. 39).

Probably trauma, or local mechanical interference with the circulation, plays an important part in determining the situation of tertiary syphilitic manifestations on the skin.

Histopathology.—On section marked changes are visible in the arterioles and capillary vessels. There is a perivascular lymphocytic infiltration, which involves also the walls of the vessels; the *intima* is thickened, so that the lumen of the vessel is blocked, and the *media* is frequently destroyed. These changes lead to a local necrosis of tissue, and the circular shape of a gumma is explained by the fact that the mischief begins round a vessel and tends to involve the whole terminal zone served by that vessel.

TERTIARY SYPHILIS AFFECTING MUCOUS MEMBRANES

Tertiary syphilis may affect the mucosæ, especially of the mouth and naso-pharynx, either superficially or deeply and destructively. The lesions may be isolated, or multiple and confluent superficial

serpiginous ulcers, or they may appear as destructive gummata which erode a hole in the tongue, or bore through the hard or soft palate. On the tongue, in addition to the gumma, we may meet with a diffuse interstitial and parenchymatous inflammation (Fig. 40), which leads to



[Photo by Dr. Oram.]

FIG. 40.—Diffuse interstitial and parenchymatous syphilitic glossitis.

swelling of the organ, and the development of irregular deep furrows, the base of which is sometimes ulcerated. The ridges between the furrows lose their papillæ, and are covered by a thin, greyish-white, smooth, glistening epithelium. Frequently these ridges become the site of leucoplakia. A gumma of the tongue must be distinguished from *epithelioma*. Epithelioma is usually situated on the tip or sides of the tongue, while a gumma is usually on the dorsum. Further, epithelioma has a stony hard base, and hard everted borders; it interferes early with the mobility of the tongue, is painful and tends to bleed at a touch, and there is early characteristic enlargement of lymphatic

glands. In all doubtful cases a section should be examined microscopically. For differential diagnosis in this connection a Wassermann test is worse than useless. If positive, it does not exclude carcinoma, for carcinoma may develop in a patient who has had syphilis, and who retains a "positive serum." The result of the test may produce a sense of security which the subsequent history of the lesion painfully destroys

THE WASSERMANN REACTION

As the making of the Wassermann test is a matter for the expert pathologist, we need not describe the technique here, but some words as to its value may be of help. In all stages of syphilis, except during the first seventeen days after the appearance of a primary sore, the reaction is a valuable though not infallible aid to diagnosis.

A positive result is always of more value than a negative one. A negative result may be given at all stages of syphilis; therefore one should never rely on a negative result unless it is several times repeated, and only then if it harmonises with the clinical signs. A negative result may be given by serum from a syphilitic patient who is taking, or has recently been taking, anti-syphilitic remedies, especially mercury.

The reaction is not a specific test for syphilis. Positive results may be given by the serum of patients suffering from *frambæsia*, *leprosy*, *trypanosomiasis*, *malaria*, *rheumatic fever*, *relapsing fever*, *scarlet* and *typhoid fever*, *diabetes*, *sclerodermia*, or by serum from a patient who has recently had *chloroform*. It is usually possible, however, to eliminate the above factors as causal agents.

To be of value for diagnostic purposes in any particular case the **W.R.** must be judged side by side with the clinical history and the clinical appearances.

A positive **W.R.** means that a patient has, almost certainly, had syphilis ; it does not necessarily mean that the lesion actually present at the moment is syphilitic in origin. But when all is said we must admit that the **W.R.** is a great help in diagnosis and of considerable service in enabling us to judge of the efficiency of treatment.

THE SIGMA TEST

In addition to the Wassermann test, there is the Dreyer-Ward Sigma test founded on the Sachs-Georgi flocculation test. It depends on the throwing down as a flocculent precipitate of a protein fraction found in the blood serum of syphilitics by a solution of antigen. The delicacy of the test is considerable. It makes an excellent control for the **W.R.**

HEREDITARY SYPHILIS

Syphilis is one of the few diseases definitely transmissible by heredity from parent to child. We must limit the term to that class of case in which infection of the fœtus occurs during intra-uterine life, and not apply it to those rare cases in which a healthy child acquires the disease during the process of birth by infection from a syphilitic focus in the maternal passages.

Hereditary syphilis may be acquired :

1. **From the mother**, who has been infected from some other source than the father of the child, and who still retains living spiro-nemes in her system though she may present no outward signs of the disease (*ocular or germ syphilis*).

2. **From the father** (*sperm syphilis*). It has not yet been proved that a spermatozoon can remain viable if it has been penetrated by a spironeme. Probably the spironeme finds its way into the uterus and reaches the ovum in the seminal fluid, and enters it either through the aperture made by the spermatozoon or effects an entrance for itself. In this type of case the mother often presents no signs of syphilis till long after the birth of her child, when she may develop some of the later phenomena of syphilis, such as gummata or tertiary ulcers on the legs. This is the kind of case one often sees in hospital out-patient departments. A woman who bears a syphilitic child is immune from

syphilis (*Colles's Law*). Modern research has explained this. Her blood invariably gives a positive Wassermann reaction. She has latent syphilis.

3. **From both parents**—seminal fluid and ova both being syphilitic. This dual infection is the commonest source of heredo-syphilis, and, according to Fournier, 92 per cent. of all children born of such parents are syphilitic, and about 70 per cent. of them die during intra-uterine life.

4. **From post-conceptional infection.** Here the mother becomes infected during pregnancy, and the developing fœtus is involved in the infection. If the infection of the mother does not take place before the sixth month of gestation, the child may escape. If the mother is infected at any time before the fifth month, unless she is efficiently treated before systemic invasion occurs, the child will probably be an heredo-syphilitic. Roughly, it may be said that the later in pregnancy a woman is infected the better the chance of the child to escape infection. *Profeta's law* states that an apparently healthy child born of a syphilitic mother cannot acquire syphilis either by suckling or by any other form of contact. This immunity is not, however, life-long. Such a child usually gives a positive **W.R.** during the first few months of life, but the reaction may become negative later.

Like acquired syphilis, hereditary syphilis varies in severity. If severe, it may lead to the death of the fœtus at an early stage of intra-uterine life, with consequent abortion or miscarriage. In subsequent pregnancies the same result may occur, usually at a later and later date, until at last the mother may give birth to a still-born macerated fœtus at term. Later may come a full-time child which lives only for a few hours, and later still a viable child which, shortly after birth, begins to show evidences of heredo-infection. Or, in other cases, after a series of abortions or miscarriages, a child may be born which does not exhibit during infancy any outward signs of syphilis, but which may reveal the hereditary dyscrasia by developing interstitial keratitis at seven or nine years of age, or adolescent general paralysis of the insane at or after puberty. It is probable, however, that these children have exhibited at an earlier date transient signs of their heredo-infection which escaped notice or were not recognised.

Excluding those cases in which a still-born child is expelled near term, red, macerated, with extensively peeling epidermis, the placenta being large and frequently gummatous, there are two types of hereditary syphilis with which we must deal.

1. HEREDITARY SYPHILIS, WITH CUTANEOUS LESIONS VISIBLE AT BIRTH

The child, born prematurely or at term, is weazened and old-looking. Its skin is of a dirty yellowish-grey colour, and may be pinched up in loose folds, for the subcutaneous fat is deficient. The

child is below normal weight. The hair on its head is often copious (*syphilitic wig*). It may "snuffle," and its cry is faint, bleating and almost incessant—being, however, usually worse at night. This may be due to nocturnal activity of the spironemes, producing pains in the bones. In this type the skin lesions usually consist of flaccid bullæ on the palms and soles, set on a reddish base which is larger than the bullæ. The blisters contain serum or sero-pus, and are symmetrically distributed. This is the so-called **pemphigus syphiliticus infantum**. The bullæ, which are usually confined to the palms and soles, but which may affect the limbs, rupture, and expose a red moist base, or the sero-pus may dry and form crusts. As a rule a child born with such lesions dies—often suddenly—in a few days. If it survive, it may develop other syphilitic lesions, *e.g.* fissured lips, or condylomata round the anus or in the umbilical pit.

2. HEREDITARY SYPHILIS : THE CHILD BEING BORN APPARENTLY HEALTHY, BUT SHOWING SIGNS OF SYPHILIS AT A LATER DATE

Sometimes the earliest symptom is progressive and marked loss of weight. The child "snuffles," sleeps badly, and has the characteristic bleating cry. Cutaneous

lesions begin to appear from the second week to the end of the third month. As a rule they are of the papular variety—bullæ being rare in this type. They occur chiefly on the buttocks, the thighs, legs and feet. Sometimes they appear on other parts of the body. The papules are rounded, somewhat elastic, and of a rose-pink or dusky red colour. In moist, warm areas such as the genito-crural region they may hypertrophy and assume the character of condylomata. Some of the papules, more particularly on the buttocks, may ulcerate superficially. When they disappear they leave for a time brownish stains. The lips usually become fissured, and a tiny condyloma may be found occasionally at their angles.



FIG. 41.—Tertiary ulceration in heredo-syphilitic child.

The child usually recovers under anti-syphilitic treatment, the last lesions to disappear being the fissures round the mouth. Sometimes the child drifts into a condition of marasmus, and dies ; or, being of feeble resistance, it may succumb to some intercurrent disease. If it survive infancy, the heredo-syphilitic child may develop gummata or tertiary ulcers in childhood or later (Fig. 41).

DIFFERENTIAL DIAGNOSIS OF CONGENITAL SYPHILIS

The eruption of congenital syphilis may be confused with *napkin rash*—a simple erythema, sometimes complicated by pus infection. The lesions of this eruption, which are reddish shiny papules, occur chiefly upon points of pressure, *e.g.* the convexity of the buttocks, the scrotum, and thighs. The eruption varies in intensity and sometimes in locality from day to day. The palms and soles are free from lesions, and there are no signs of syphilis elsewhere, *e.g.* snuffles, fissured lips, bleeding cry, etc.

Pustular scabies affecting a young child may also be confused with syphilis, especially if the pustules are on the soles or palms. But in scabies it is usually possible to discover some of the typical burrows, and to find among the immediate attendants on the child some one also affected. Further, there are no other evidences of syphilis such as fissured lips, etc.

Impetigo or *seborrhæic dermatitis* affecting the napkin area may also be confused with syphilis ; but these conditions affect chiefly the flexures of the limbs and the whole napkin area, spreading on to the abdomen and other parts of the trunk. The palms and soles are free, and there are no fissures of the lips.

STIGMATA OF HEREDITARY SYPHILIS

In a text-book on dermatology it is not necessary to follow hereditary syphilis through its manifestations in the bones, the nervous system, and its manifold visceral lesions, but the more important of the stigmata of hereditary syphilis as met with in the child which survives till puberty, may here be mentioned. They are (1) scars of fissures round the lips ; (2) saddle-back nose ; (3) abnormal prominence of the occipital bone at the level of the lambdoid suture (Sabouraud) ; (4) Parrot's nodes—bony deposits laid down near the anterior fontanelle which give to the cranium a "hot-cross-bun" appearance ; (5) sabre-shaped shin bones—marked thickening of the tibiæ, with a strong anterior convexity ; (6) labyrinthine deafness ; (7) interstitial keratitis ; (8) Hutchinson's teeth. These teeth belong to the second dentition. The ~~first dentition~~ ^{first dentition} is often early, the teeth are badly formed and decay readily, the enamel crumbling. The characteristics of the second dentition in syphilis are best described in Hutchinson's own words :

“ If the upper central incisors are *dwarfed*, too *short* and too *narrow*, and if they display a *single central cleft* in their free edge, then the diagnosis of syphilis is almost certain. If the cleft is present and the dwarfing absent, or if the peculiar form of dwarfing be present without any conspicuous cleft, the diagnosis may still be made with much confidence.”

To the above stigmata may be added a positive Wassermann reaction. It cannot be insisted upon too strongly that many of the above stigmata may be absent. Their persistence depends on the severity of the heredo-infection, and the inadequacy of treatment. But apart from them it must never be forgotten that congenital syphilis may leave an invisible mark upon all the organs of the body, which may reveal itself only under the strain of some other disease. An hereditary syphilitic child is a child handicapped heavily in the race of life.

PROGNOSIS IN SYPHILIS

We are never justified in speaking of any infection with syphilis as a mild attack. Every infection is potentially grave.

In all cases the prognosis as to the disappearance of the skin lesions is good. The prognosis as to cure is another matter altogether. With modern treatment a large proportion of patients may be cured, provided that the diagnosis is made early, and systematic, thorough treatment is at once begun and persevered with for a sufficiently long time. The criteria of cure are the disappearance of symptoms, the suppression of all later developments, and a persistently negative Wassermann reaction in blood serum and cerebro-spinal fluid.

If energetic treatment is not begun until there are definite syphilitic lesions in the brain or cord, the case is definitely incurable. The lesions may be influenced for the better, and possibly be made to disappear, but permanent damage is left behind, and no remedy known to science can reconvert sclerosed nerve tissues into normal tissues again.

In every case the prognosis is influenced by the patient's habits. Alcoholism increases the gravity of the prognosis, and the hard-working business man, perpetually under tense nervous strain, or the anxious-minded worrying individual is more likely to develop incurable lesions in the nervous system than some care-free philosopher who attends to his treatment, but who does not allow the pursuit of wealth or the minor catastrophes of life to torment him.

If we exclude cases of nerve syphilis, and congenital syphilis, the disease is rarely a direct cause of death in this country nowadays; but it is one of the three chief killing diseases through its secondary effects on the heart, blood-vessels, and other organs.

SYPHILIS AND MARRIAGE

May a person who has had syphilis marry? The answer to this question must be based on a full review of the case: history, amount of treatment, blood reactions, and so on. My own practice is to permit marriage in all cases which have received thorough treatment, which have had no outward evidences of the disease for at least two years if men, three years if women, and which have given, for at least twelve months immediately prior to marriage, a consistently negative Wassermann reaction both of serum and cerebro-spinal fluid. I have never known any disaster follow this rule. In a few cases known to me in which marriage took place after a shorter interval no ill-effects have followed; but the longer the interval the safer the step.

One is sometimes faced with this problem: a patient, thoroughly treated, has had no symptoms for three or four years, but the **W.R.** of the blood serum remains positive. Should he be allowed to marry? It is better that he should not; but if marriage is imperative he may be allowed to do so provided his cerebro-spinal fluid gives a negative reaction. In such a case it is a matter of elementary justice that the whole situation should be explained, preferably by the doctor, to the prospective wife.

TREATMENT OF SYPHILIS

Our goal is not the healing or disappearance of the immediate lesion, but the eradication of the disease. In aiming at the latter we achieve the former. The first step in the successful treatment of syphilis is early accurate diagnosis.

Local Treatment of the Chancre.—General anti-syphilitic treatment should be commenced at once, but local treatment of the chancre is also advisable. If on the prepuce, it may be excised by complete circumcision, but we must remember that before it has appeared as a visible lesion spirochaetes have already found their way to the adjacent lymph glands, and extirpation of the chancre does not prevent systemic infection. It only removes one focus in which the causal organism is multiplying.

Short of excision, which the situation of the chancre may prevent, it should be kept clean and dressed with black-wash, or anointed daily, as Colonel Harrison has suggested, with a 33½ per cent. calomel ointment. If, through a mixed infection, a chancre becomes phagedænic, it may be treated under a general anæsthetic with acid nitrate of mercury—or if this is impracticable the affected part should be immersed for an hour at a time, several times daily, in Eusol (3i.-3x.), or in 1-6000 solution of bichloride of mercury, or in 1-10,000 solution of iodine.

If a chancre on the glans penis is complicated by phimosis, the

prepuce should be slit up the dorsum from tip to base. In this way the chancre is exposed freely, and may be kept clean.

The most effective treatment of the chancre is, however, the systemic treatment of the disease.

Systemic Treatment.—For this purpose our most powerful weapons are salvarsan or its derivatives, mercury and bismuth, while potassium iodide, which is of special efficacy in the tertiary stage of the disease, is not without its uses in the secondary stage.

Mercurial Treatment.—Mercury is administered (*a*) by the mouth, (*b*) by inunction, and (*c*) by intramuscular injection.

(*a*) Of these methods the **oral** is the simplest but the least efficacious. The drug may be given in pills, tablets, or solution. A pill or tablet containing 1 grain of Hydrarg. c Cretâ with 1 grain of Pulv. Ipecac. co. may be administered thrice daily after meals, or, if the patient's tolerance is good, two pills may be given thrice daily. Treatment should be prolonged but intermittent, and careful attention should be devoted to the condition of the mouth and gums. Nowadays, when more effective treatment with arsenical derivatives is possible, treatment with pills alone is hardly justifiable unless there is some definite contra-indication to the use of the newer remedies. But mercurial pills may be used for continuation purposes, or when, as in the case of sailors, a long period may elapse before the patient can have further intensive treatment. *Pilula Hydrargyri* 1–2 grs. may be used in the same way, but is less well tolerated than the compound of grey powder and Dover's powder.

As an alternative one may administer *Liquor Hydrargyri Perchloridi* in doses of $\overline{3}$ i.– $\overline{3}$ ii. thrice daily, usually combined with some bitter infusion or tincture.

Grave doubt has been thrown on the advisability of administering the so-called continuation courses of mercury to patients who are Wassermann-negative by Glynn, Roberts and Bigland.* From a long and careful series of observations they conclude that courses of grey oil "definitely increase instead of greatly diminishing the tendency to Wassermann relapse," while courses of mercury tablets by the mouth "certainly do not diminish, but very probably increase the tendency to Wassermann relapse." They explain these phenomena by suggesting that mercury, being unable to reach the "inaccessible residual spirochaetes, simply depresses the patient's immunity."

(*b*) **Inunction** is a rapid method of bringing a patient under the influence of mercury, and has this advantage, that in cases of secondary syphilis in active eruption, the mercury introduced through the skin

* "The Effect of Treatment on the Wassermann Reaction of Syphilitic Patients," by Ernest Glynn, F.R.C.P., R. E. Roberts, M.D., and Phoebe M. Bigland, M.R.C.P. (H.M. Stationery Office. 1926.)

is brought into immediate contact with the organisms there. Inunction is best performed in the evening, as there is evidence that the spironemes are most plentiful in the skin lesions at night. Inunction cannot be performed efficiently by the patient himself. To get full value from it, it must be carried out by an expert rubber, and with the naked hands. The preparation I recommend for the purpose is metallic mercury put up in tablets of cacao butter, sold under the proprietary name of "Mer-curettes." Each contains 30 grains of metallic mercury. Twenty-four rubbings, spread over thirty days, constitute a full course. If any symptoms of intolerance such as stomatitis, abdominal pain, or diarrhœa occur, the course may be interrupted for fourteen days or longer to permit of elimination, and then recommenced. Tolerance may be promoted by administering to the patient during his course some preparation of sulphur (*e.g.* sulphur tablets, grs. v. t.d.s.), or, what is perhaps better, $\overline{5i}$.- $\overline{5ii}$. of colloidal sulphur thrice daily after food. The mercury eliminated by the intestinal mucosa combines with the sulphur in the bowel to form an insoluble black sulphide of mercury which is voided in the fæces. In this way the vicious circle of partial elimination and partial reabsorption of the mercury with its attendant dangers of mercurial poisoning, is broken. Inunction is performed as follows: The rubber warms his hands and applies vigorous massage (petrissage, slapping, etc.) for a few minutes to the part to be anointed, in order to promote a flow of blood to the surface. He then warms the tablet, and with the palms and fingers of both hands rubs, kneads, and works it into the skin. He proceeds in a routine way—rubbing a fresh area daily—as follows:—

- 1st rubbing, the whole back from the *vertebra prominens* to sacrum ;
- 2nd rubbing, buttocks and both thighs, especially on the posterior and outer aspects, avoiding the groins, where the delicate skin might develop dermatitis ;
- 3rd rubbing, both legs ;
- 4th rubbing, both arms from shoulders to midway between the elbows and wrists.
- 5th rubbing, return to the back, and proceed seriatim as before.*

The anterior abdominal wall should not be used as a site for mercurial inunction. During the treatment a patient should wear cotton under-clothing next his skin, covered, if need be, with woollen garments. He should take a hot bath once a week. Hairy parts of the body, like the thighs, should be shaved before inunction. The disadvantages of the method are : (1) its dirtiness ; (2) the time required daily ; (3) the need of an expert rubber.

* For these practical details I am indebted to Mr. Arthur Padley, Liverpool, who is an expert rubber.

(c) **Intramuscular injection** is a speedy, effective, almost painless method of administering mercury, which may be carried out with very little inconvenience to the patient. Soluble or insoluble preparations may be used. Probably insoluble preparations are the better, as one gets a slow, progressive constant absorption of mercury in a fine state of subdivision. Many soluble salts of mercury have been recommended. The following are the best :—

1. Lactate of mercury : $\frac{1}{8}$ grain in 1 c.c. of distilled water injected daily. This preparation is relatively non-toxic, non-irritating, and efficacious.

2. Succinimide of mercury : $\frac{1}{4}$ — $\frac{1}{3}$ grain in 1 c.c. of distilled water (if need be combined with cocaine) daily. This is a safe and useful salt.

3. Collosol mercury (strictly speaking not a solution of mercury, but a very fine aqueous suspension) : 1 c.c. daily. A painless, well-borne, and effective preparation.

Of insoluble forms of mercury the chief in use for intramuscular injection are (1) metallic mercury ; (2) salicylate of mercury ; (3) calomel.

1. Metallic mercury is injected in an oily suspension, preferably in the form of Lambkin's mercurial cream, which contains 1 grain of metallic mercury in every 10 minims. The fatty basis is palmitin, with 10 per cent. of creasote and camphoric acid to lessen pain. Ten or twelve injections, each of ten minims, at intervals of a week, constitute a course. The injections, if properly given, are well tolerated and efficacious ; but they should not be administered to broken-down alcoholics or patients with acute or chronic renal disease.

2. Salicylate of mercury : $\frac{1}{3}$ —1 grain in 10 minims of liquid paraffin once weekly for ten or twelve weeks.

3. Calomel : $\frac{1}{2}$ grain once a week for four or six weeks in 10 minims of Lambkin's creo-camph. and palmitin cream. The injections are painful, but of the greatest value in cases in which heroic treatment is required.

Technique of Intramuscular Injections.—The safest and most convenient spot at which to make these injections is the buttocks at a point a little to the outer side of the middle of an imaginary line drawn from the anterior superior iliac spine to the upper end of the intergluteal furrow. The needle, preferably of platino-iridium, should be of medium bore and $1\frac{1}{2}$ —2 inches long. The patient should stand, or lie prone, with both buttocks fully exposed to a good light. The skin should be disinfected with iodine, and the needle should be plunged with a quick thrust through the skin deep into the muscles at the selected point. If the point strikes bone, withdraw it a little. If any blood escapes along the needle, withdraw it completely and re-insert it at another point. If no blood escapes, fit the loaded syringe gently

to the needle, and inject the contents slowly, steadying the butt of the needle the while, lest the pressure of the syringe carry it further in.

Disconnect the syringe from the needle, aspirate a little air into it, and inject this into the needle still *in situ*. This expels the last drop of oil from the bore of the needle into the deep tissues, and prevents "tracking," with the consequent formation of painful subcutaneous nodes. Then withdraw the needle and syringe in one piece by a sudden movement, pinching up the skin and subcutaneous tissue around it with the fingers of the other hand. Massage the site of injection for a moment to distribute the mercury among the muscle fibres, and, finally, paint the needle-puncture over with flexile collodion.

Subsidiary Methods of Mercurial Treatment are (a) intravenous injection; (b) mercurial baths; (c) fumigation; (d) impregnation by means of a bib or binder impregnated with half-strength Unguentum Hydrarg.; and (e) suppositories; but none of the above methods equals in safety, efficiency, and certainty the methods already described.

TREATMENT WITH ARSENO-BENZENE COMPOUNDS

The introduction of salvarsan and its congeners has revolutionised the treatment of syphilis. For causing the rapid disappearance of visible lesions—especially those of the mucous membranes—the arseno-benzene compounds are unrivalled. Nowadays, neo-salvarsan, or one of its imitations, is usually administered, partly because of its greater solubility, and the greater ease with which it is prepared for injection: but it is much less efficacious than the original salvarsan, and the injections must be repeated more frequently.

The "Neo" salts now generally employed in this country are neo-salvarsan, neo-kharsivan, and novarsenobillon, which will be referred to generically as "914" in what is to follow.

The Administration of 914.—This compound may be administered subcutaneously, intramuscularly, or intravenously in doses of from '1 gm. to '9 gm.

Subcutaneous Injections.—Dissolve the salt in 1-2 c.c. of distilled sterilised water in a Record syringe. Pull up into a conical mass the skin and subcutaneous tissue over the upper and outer part of the buttock, and insert the needle obliquely into the base of this mass of tissue, carrying it in till it touches but does not penetrate the fascia covering the muscle. A "pleuritic rub," easily detectable if one's tactile sense is acute, is felt if the needle-point be moved laterally over the fascia. When satisfied that the needle is lying correctly, one should attach the loaded syringe and inject its contents. There is some pain at the time of injection which may last for some days, and be attended by considerable swelling, redness, and tenderness.

Intramuscular Injections.—The dose to be administered may be rubbed up in sterile olive oil, Lambkin's creo-camph-cream base, or be dissolved simply in sterile water. The total bulk of the injection should not exceed 1 c.c. If it does, it is best to inject one-half into each buttock. The site of injection and the technique of administration is the same as for intramuscular injections of mercury. The pain is considerable, and may require to be controlled by a hypodermic injection of $\frac{1}{4}$ – $\frac{1}{3}$ gr. of morphia. For some days there is pain, swelling, and redness at the site of injection, which may be lessened by hot hip baths and by gentle massage with warm olive oil.

Intravenous Injections. Preliminary Considerations.—The patient should be examined carefully before a course of intravenous injections is begun. Special attention should be paid to the condition of the kidneys and heart. A mild degree of albuminuria, even if casts are present in the urine, is not a complete contra-indication for the intravenous injection of "914," provided the diurnal flow of urine is of average quantity. In such cases, however, it is well to begin with a small dose, say .15–.2 grm. and to proceed cautiously. Advanced disease of the liver, heart or lungs, gumma of the brain, diabetes and marked arterio-sclerosis may be regarded as making the administration of 914 highly unsafe. But a well-compensated heart lesion, a moderate degree of glycosuria, or slight arterio-sclerosis, do not absolutely contra-indicate this treatment. They serve as danger signals, which proclaim the need of caution.

On account of the severe form of dermatitis which may follow the administration of arseno-benzene compounds, it is essential to make a thorough examination of the integument before each injection. Eczema if at all extensive, marked seborrhœa, and a history of inflammatory skin disease of any kind should counsel caution.

Preparation of the Patient.—The night before an injection, the patient should take a purge, and on the morning of treatment a light breakfast. No solid food must be taken for at least two hours before and six hours after an injection. The injection should be administered with the patient lying on his back. The arm to be operated upon should be stretched out upon a low table, level with the height of the recumbent body. The skin at the bend of the elbow should be painted carefully with iodine, and a tourniquet should be applied with moderate firmness to the upper arm a little above it. Compression should be sufficient to retard or stop the superficial venous return; it should not be strong enough to stop the arterial flow. In this way the veins at the bend of the elbow—median-cephalic and median-basilic—are thrown into prominence. If the veins are small, or somewhat buried in subcutaneous fat, they may sometimes be made to stand out by briskly flicking the skin over them with a sterile towel, or by the

application for a few moments of a hot compress. During these proceedings the tourniquet should be relaxed. Sometimes a vein is more palpable than visible, in which case a careful examination of its course will afford a sufficient guide for the insertion of the needle.

Technique of Operation.—The dose of the salt determined upon should be dissolved in 20 c.c. of freshly sterilised distilled water at a temperature not exceeding 100° F., in a sterilised glass vessel, and aspirated into a sterile Record syringe. The needle, whose size should depend on the size of the vein, is then attached to the nozzle, and a drop of the solution is forced into it to expel the air. With the light falling upon the site of operation, so that no shadows darken the field, the point of the needle is then pushed gently but firmly through the skin over the vein, and carried through the roof of the vessel, so that it lies in its lumen, catheterising it. Experience and a delicate sense of touch let the operator know if the needle is correctly situated. The backflow of a little blood into the syringe before the tourniquet is removed indicates that the needle is lying correctly in the vein, while pain and swelling at the site of injection as soon as the piston is pushed a little down indicate that the needle-point is outside the vein. In the latter case, it should be withdrawn at once, and inserted again.

After the removal of the tourniquet, the contents of the syringe should be injected gradually, by steady pressure on the piston, the operation taking from 2–3 minutes. Care should be taken that no air is injected. When the injection is over, the needle should be withdrawn quickly, the arm elevated, and the site of venæ-puncture dressed with a light sterilised dressing. If possible, the patient should rest or go to bed for some hours after each injection; but this is not absolutely necessary.

Sequelæ of Injections.—Not infrequently two or three hours after an injection, especially if a florid secondary eruption is present, there is a rigor with a rise of temperature to 100°–101° F., with some headache. There may also be some diarrhœa and vomiting, but, as a rule, after a night's rest all these symptoms have disappeared.

In almost every case, after an injection of 914 there is a considerable fall in blood-pressure, which may last for several days. If this is sudden and severe, unpleasant symptoms, for which the best antidote is a hypodermic injection of 5–10 minims of 1–1000 adrenalin chloride solution, may arise. Sometimes, following a vaso-motor reaction of this kind, there is an outbreak of urticaria, or localised itching without urticarial wheals. But the most serious cutaneous complication is a variety of *Exfoliative dermatitis*. This usually occurs, if it occur at all, at the end of a course of eight or ten injections; sometimes as long as a month after cessation of treatment. I have seen it occur in a woman after two injections, given at weekly intervals, amounting

together to 1·05 grm. of 914. This type of dermatitis begins as a scarlatiniform or morbilliform erythema, and spreads rapidly until the whole integument is involved. When fully evolved the eruption may suggest an *exfoliating dermatitis*, a *pityriasis rubra* or a *severe seborrhæic eczema*. It may remain dry, red, and scaly, or it may become moist, septic, and be attended by the shedding of macerated sheets of epidermis. There is a marked tendency to pustulation and abscess formation. Many of the lymphatic glands enlarge; some suppurate. Sometimes the hair and nails are shed. This formidable complication, which may terminate in death from exhaustion, toxæmia, pneumonia, or intestinal hæmorrhage, is most likely to occur in cases subjected to intensive treatment, and in which due care has not been exercised to discover early signs of intolerance. Fortunately, in most cases its course can now be controlled by *intramine*. An intramuscular injection of 2·5 c.c., followed a week later by one of 5 c.c., will often suffice to arrest a case. Or an intravenous injection in 5 c.c. of sterile distilled water of 0·45-0·9 grm. of pure exsiccated sodium thiosulphate may be given every other day till six injections have been administered. Ichthyol in pills of 2·5 grains thrice daily has been recommended by Bolani, and I have found colloidal sulphur in 1-2 dr. doses thrice daily of great service in this condition. As a local application, the following is excellent:—

R. Glycerini Plumbi Subacetatis, ℥i.
Glycerini, ℥i.
Aq. ad ℥x.

It may be dabbed on and allowed to dry, or applied on strips of lint. A bran bath often adds greatly to the patient's comfort. When the moist condition disappears, the scaling skin may be treated with a thin salicylic and ichthyol ointment:—

R. Ichthyol, grs. x.
Acidi Salicylici, grs. xv.
Paraffini Mollis, ℥i.
M.

Frequently, after an attack of arsenical dermatitis there is a deep brown pigmentation left which may last for years.

In rare cases a course of treatment with the arseno-benzene compounds has been followed by acute yellow atrophy of the liver.

Treatment by Schedule.—It cannot be insisted upon too strongly that there is no routine treatment for syphilis. Each case must be treated on its merits. The War has burned into the minds of many practitioners the erroneous idea that the disease can be treated by schedule: a certain number of doses of neo-salvarsan, a certain number of injections of mercury, and the patient is cured! This is not so.

Routine treatment was adopted during the war in military V.D. hospitals with three objects : (1) to get rid of outward symptoms ; (2) to render the patient fit to return to duty ; (3) to ensure that each patient had sufficient treatment to protect him against early recurrences. Experience showed that routine treatment gave excellent results ; but in every case one must take the personal factor into consideration, and be guided accordingly ; and it is safer, since syphilis is above all others a treacherous disease, to err on the side of giving a little too much treatment rather than too little. Always begin with a small dose, '3 grm. in a woman, '45 grm. in a man, and do not speak of a cure till the patient has been watched for a long period (2-4 years) from the time of infection.

The following is the scheme I recommend. It may be modified to suit the individual case, and, it will be noted, it does not fail on the side of inadequacy.

SCHEME FOR THE TREATMENT OF AN ADULT MALE SUFFERING FROM SECONDARY SYPHILIS (WASSERMANN POSITIVE), BUT OTHERWISE HEALTHY

(a) A full course of neo-kharsivan consists of ten weekly intravenous injections as follows : 0'45, 0'6, 0'9, 0'9, 0'9, 0'9, 0'9, 0'9 ; rest fourteen days ; then give 0'9 and 0'9. Total of neo-kharsivan, 8'25 grammes.

(b) A full course of Hg or bismuth injections consists of twelve weekly doses each containing 1 grain of metallic mercury or bismuth.

1. Begin by giving (a) and (b) simultaneously.

2. Wait a month ; then test blood and cerebro-spinal fluid. If both are negative, test again in three months. If still negative, wait three months, then give half (a) and half (b).

3. If reaction is positive at the first test, after completion of the first course, give one-half (a) and (b) in its entirety ; and repeat if necessary at end of three months until the Wassermann becomes negative.

2nd Year.—Even in absence of all symptoms, the Wassermann being negative, give one-half (a) and (b) in its entirety. This course may be divided into two parts and given at intervals of six months.

3rd Year.—No symptoms ; Wassermann negative. Give one-third (a) and (b) in its entirety with potassium iodide for three months, dividing the treatment up over the year.

In all cases the blood and cerebro-spinal fluid should be tested at regular intervals.

The scheme may be modified at any stage to meet the requirements of the individual case, A case met with in the primary stage would,

in all likelihood, require less intensive treatment, while a tertiary case will need less arsenic and more potassium iodide.

Of other preparations for the treatment of syphilis a word may be said of *Galyl* (a salvarsan compound containing phosphorus), *Luargol* (a salvarsan compound with antimony and silver), *Silver-salvarsan*, *Sulfarsenol* and *Antimony*.

Galyl may be administered intramuscularly in glucose, in doses of from 0.3 to 0.9 gm. ; or intravenously in distilled water. My experience is that it is one of the **less** efficacious of the arseno-benzene group.

Luargol, or, better, Danysz' modification, di-sodo-luargol is relatively non-toxic, and highly efficacious. It is easily soluble in distilled water and may be injected intravenously in doses of 0.1 to 0.3 gm. every week for five or six weeks.

Silver-salvarsan (Silber-salvarsan, Kolle) is about twice as potent as ordinary salvarsan. It may be given in concentrated solution (0.15 to 0.3 gm. in 10 c.c. of distilled water) intravenously, at intervals of a week, five to eight injections constituting a course.

Sulfarsenol—an organic arsenical compound containing sulphur—has given good results. It is said to be five times less toxic than "606," and in therapeutic effect it is about one and a half times as potent as neo-salvarsan. It does not readily oxidise, and therefore a solution of it in distilled water may be kept for some hours without deterioration.

It may be administered hypodermically, intramuscularly or intravenously. Injected into the deep subcutaneous tissue of the buttock, or intramuscularly in the same region, it does not give rise to much inconvenience. It is prepared by dissolving the salt in distilled water, and the dose may be repeated in from three days to a week. The dosage is from 0.3 gm. to 0.9 gm. in 1-5 c.c. of sterile distilled water. It is undoubtedly one of the most efficient remedies of the arsenic group.

Antimony is less efficacious than salvarsan, and may be used in the form of tartar emetic grains 1-1½ in 5 ounces of water (McDonagh) and injected intravenously twice or thrice a week.

Colloidal Antimony (Crookes) in doses of 1.0 c.cm. to 10.0 c.cm. of a 0.04 per cent. suspension may be administered intravenously once or twice a week.

Bismuth in the Treatment of Syphilis.—Since Sazerac and Levaditi's first report four years ago on the efficacy of bismuth salts in the treatment of syphilis, a huge literature has developed round the subject. It is now generally agreed that bismuth salts have definite spirillicidal effects. Their toxicity for the spirochæta pallidum is said to be higher than that of mercury. While not prepared to endorse this without further evidence, the bismuth preparations I have tried

have given results equal to those obtained by the use of mercury. And it is well, in dealing with such a disease as syphilis, to have another efficient weapon added to our armoury.

The method of administration is by intramuscular injection. The salt of bismuth is suspended in olive oil, or in glucose solution. The site of injection is the same as for the mercurial preparations, viz. the buttocks. Care should be taken that the injection is not deposited subcutaneously. It is probable that the bismuth is gradually converted into a soluble compound with albumen, and so becomes gradually absorbed.

Elimination is by the same routes as for mercury; therefore, the mouth, the kidneys, and the bowels must be watched with care during a course of bismuth injections. The toxic symptoms produced by bismuth resemble those produced by mercury. The breath should be watched for fautor; the gums for a characteristic bismuth "blue line," said to be broader and less well margined than the corresponding "lead line."

While under treatment with bismuth injections a patient must attend carefully to the hygiene of the mouth. Diarrhoea and anæmia may develop as toxic bye-effects. Cutaneous eruptions, in consequence of bismuth injections would seem to be rare. A pruriginous erythematous eruption has been described.

With some of the salts of bismuth—especially those in suspension in oil, painful indurated nodes in the buttocks are not uncommon. There are many preparations on the market, but in my experience the most satisfactory results are given by glucose-suspensions of metallic bismuth. Of these, the one I employ is "bismostab." It contains 0.20 gm. of metallic bismuth per cubic centimetre. The finely divided metal is easily shaken up through the glucose solution—an advantage over many of the oily preparations which require warming and very careful and thorough agitation before the salt spreads evenly through the oil. It is easily sucked into the syringe; it does not tend to clog the needle; its administration is practically painless, and it gives the desired results.

The individual tolerance towards bismuth varies. Its action tends to be cumulative. It would appear to be less toxic than mercury. In virtue of its slow absorption its action is prolonged. It should not be used instead of, but in conjunction with, one of the salvarsan derivatives in primary and secondary syphilis.

While recognising its value, it is too early to speak categorically of its ultimate place in the treatment of syphilis.

A course of bismuth treatment should not exceed in all 2 grams of the salt. This should be divided up between 10–15 injections at intervals of a week.

THE IODIDES

In the tertiary stage potassium iodide, sodium iodide, ammonium iodide, tincture of iodine, colloidal iodine, and such organic iodide compounds as the proprietary iodo-glidine, have remarkable powers in causing lesions to heal. But the spirochemicidal effect of the iodides is not high—and iodides alone do not cure syphilis.

In the secondary stage, iodides are of special value in liberating spirochetes which may have been shut off in small thrombosed vessels, or fibrous tissue.

General Treatment.—In the treatment of syphilis the principle to impress upon the patient is temperance in all things, and complete abstention from alcohol.

Frambæsia, Yaws, or Pian

This disease is known in different parts of the world by varying native names, *e.g.* **Parangi** (Ceylon); **Buba** (Pacific Islands); **Coko** (Fiji); **Puru** (Federated Malay States).

Definition.—Frambæsia is a disease caused by the *spirocheta pertenue*, an organism closely related to the *spirocheta pallidum*. Unknown in this country, except in the imported case, it is common among the natives of the West Indies, North Africa, Madagascar, and certain parts of Asia.

Symptoms and Course.—The primary lesion is usually extragenital, and is communicated by contact. The incubation period is 2–4 weeks, during which there are sometimes slight febrile symptoms. The primary lesion is a moist, exuding papule, which rapidly becomes surrounded by other papules of a similar character, which coalesce, forming an ulcerated surface with irregular edges. The primary lesion never indurates. From 10–12 weeks from the date of infection the secondary lesions appear, as scattered reddish crusted papules. These either subside in a few weeks, leaving slight desquamating areas, or they develop into the fungating hypertrophic granulomatous raspberry-like masses from which the disease takes its name. The chief sites for these lesions are the face, especially round the mouth, and the limbs. Often they are found round the anus. Sometimes the lesions undergo slight cornification. Spontaneous disappearance of the lesions often occurs in about twelve months—areas of pigmentation being left. The eruption is sometimes attended by itching. Later, gummata may appear. The mucous membranes are rarely affected, but there may be a slight general adenitis. Pitted sores on the feet are common, and great thickening of the skin and bones of the arms and legs may occur. In the later stages there may be an exfoliative dermatitis of the palms and soles.

The disease differs from syphilis in that the primary lesion does not indurate; the eruption often itches; the mucosæ are generally spared; it is not transmissible by heredity; it does not protect the patient against an attack of syphilis, and the central nervous system is spared. The Wassermann reaction is almost always positive.

The **Prognosis** is good, and for **treatment** the arseno-benzene compounds, mercury, and the iodides are all indicated.

RAT-BITE DERMATITIS

A disease rare in this country, due to a spirochæte or spirillum (*Sp. morsus muris*) first demonstrated by Japanese observers in 1915. The spirochæte is found in the mouth of apparently healthy rats. Twenty-five per cent. of the rats in London have been found to harbour this organism. Inoculation is by a bite. After an incubation period of 5-12 days a sclerosis, resembling a syphilitic chancre, appears at the site of inoculation. Systemic disturbances, such as rise of temperature, joint pains, and headaches, follow with the outbreak of a roseolar eruption. Sometimes there is profuse sweating, prostration, collapse, and death.

Treatment with Neosalvarsan should be employed.

ORIENTAL SORE, ALEPPO, BAGHDAD, BISKRA OR DELHI BOIL, BISKRA BUTTON

Definition.--Under these synonyms is described a lesion caused by the *Leishmania tropica*, which takes the form of an infectious granuloma affecting the skin on the exposed parts of the body, *e.g.* face, arms, legs.

Symptoms and Course.--The condition begins as a maculo-papule springing from an inflamed base. The papule exudes a serous fluid which dries to form a crust, under which an ulcer develops. The ulcer spreads, and other lesions developing near it may run into it, so that an irregular, fairly deep ulcer, varying in size from a threepenny bit to a five-shilling piece, is formed. Spontaneous recovery may occur after some months, a depressed pigmented scar being left. The lesion is usually painless, and unless there is a secondary infection with pus cocci the adjacent lymphatic glands do not enlarge.

The sore often resembles a broken-down gumma very closely; but it is more indolent, and the Wassermann reaction is negative.

The **prognosis** is good, but cure is sometimes difficult.

Treatment.--Excision has been suggested, and refrigeration with CO₂ snow, ionisation with zinc, and the application of strong antiseptics after curetting have all been tried with varying success. Probably the best results are obtained from the intravenous injection of antimony (see p. 129), from the local application of a 2 per cent. ointment of tartar emetic, or of tartar emetic in powder form, the powder being lightly dusted on and applied carefully to the edges. A local reaction of some severity may follow, but as a rule the ulcer heals quickly.

CHAPTER VI

DISEASES DUE TO VEGETABLE FUNGI

IN this section are included Ringworm in its various forms, Favus, Pityriasis versicolor, Erythrasma, Actinomycosis, Mycetoma, Blastomycetic dermatitis, Yeast infections, Sporotrichosis and Pityriasis alba.

Ringworm

There are two distinct types of ringworm fungus, the *small-spored* and the *large-spored*, and each has several sub-varieties capable of producing lesions which present well-marked, or minute though recognisable, clinical differences. Grown artificially under identical conditions, the various sub-types produce characteristic and easily distinguishable cultures.

Some varieties, e.g. the *microsporon Audouini*, affect only human beings; others affect human beings and animals indiscriminately and are transferable from the one to the other.

The following short classification may be of service :

Small-spored Ringworms : The Microspora

1. **Microsporon Audouini**, which is the cause of ordinary ringworm of the scalp in children. The spores are small, and arranged for the greater part round the hair. On microscopical examination they exhibit a clustered arrangement, like the stones in a mosaic pavement. Grown upon Sabouraud's medium this fungus yields a white downy culture like cotton-wool, with a raised greyish central tuft.

2. **Various Forms of Microspora** found on the horse, the cat, and the dog, and communicable to human beings, producing ringworm of the scalp and body in children, and rarely of the body or beard in adults. On culture, they grow more rapidly and luxuriantly than the *microsporon Audouini*, and are at first more opaque than cultures of that organism, and may be umbilicated or corrugated. Later the cultures tend to become downy, and to lose their earlier differential appearances.

Large-spored Ringworms : The Trichophyta

There are two main groups of the trichophyta : the *endothrix group*, in which the fungus lies wholly within the hair, and the *ecto-endothrix*

group, in which the fungus is found both outside and within the hair. In all the large-spored forms the spores are arranged in chains, and are somewhat larger than the spores of the microsporon types. Their cultures are of various colours and present varying contours.

The **endothrix** variety is a human type and produces the so-called "black-dot" ringworm of the scalp, ringworm of the body, and may also affect the beard and the nails.

The **ecto-endothrix** variety is primarily an animal type, but is transmissible to man, and produces lesions with a marked degree of inflammation and frequently suppuration. It is a common cause of ringworm of the beard among men who work among horses and cattle, and of "conglomerative folliculitis" on the arms. It may also produce ringworm of the scalp, the body, and the nails.

All varieties of the ringworm fungus affect chiefly the horny layer of the epidermis, and its appendages. Deeper structures are only involved secondarily, by extension of the inflammatory process which the ringworm fungus may set up.

Ringworm of the Scalp : *Tinea Tonsurans*

Three varieties of ringworm of the scalp call for consideration : (1) **Ordinary scaly ringworm** ; (2) "**Black-dot**" ringworm ; and (3) **Kerion**, or suppurative ringworm.

1. **Ordinary Scaly Ringworm of the Scalp.**—This variety is due to the *microsporon Audouini* and is by far the commonest in England. It is a disease of childhood, affecting both sexes, and tends to disappear spontaneously at puberty, possibly under the influence of endocrinous secretions. It is communicated by contact, either direct, as when a child in school poring over the same task as its infected neighbour accidentally rubs its head against the sufferer's scalp, or indirectly through the medium of headgear, brushes or combs. To a slight extent the contagion may be air-borne, infected scales being thus conveyed from sufferers to the healthy.

Symptoms.—The disease appears usually between the ages of five and twelve years as one or more small scaly round or oval patches on the scalp. The patches spread centrifugally, and usually, when the child first comes under observation, vary in size from a sixpenny piece to a five-shilling piece.

On examination, one finds the affected areas present the following appearances :—

The **skin** is of a faint rose-pink, and is covered by dry, slightly adherent greyish scales, the border of the area often being sharply limited and somewhat raised. These scurfy patches are seen to be studded over with broken hairs (Fig. 42). The broken **hairs** vary in length, but on an average are about $\frac{1}{8}$ inch long. They lie irregularly,

are lack-lustre and friable, so that if one pull on them with forceps they break either inside or just beyond the follicular orifice. On closer examination one can often see that they are sheathed with a kind of



[Photo by Dr. Oram.]

FIG. 42.—Ringworm of the scalp. *Tinea tonsurans*. Fungus: *microsporon Audouini*.

greyish-white envelope, which the application of a drop of chloroform makes more visible.

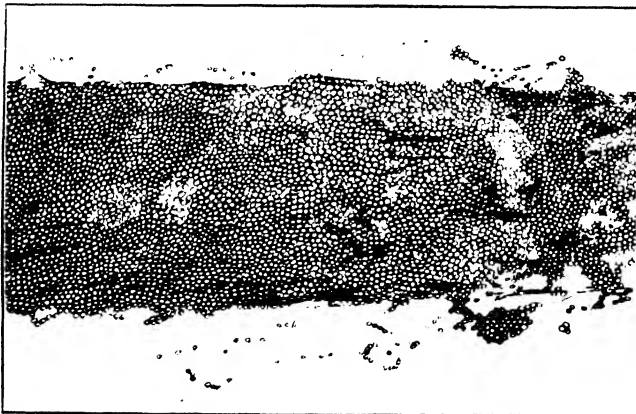
If any ointment has been applied before the patient is seen, the

characteristic scaly condition of the scalp may be absent, and the greyish-white sheath of the stumpy hairs may be difficult to recognise. If the case is untreated, the disease may spread extensively all over the scalp, and the original circular patches are lost in the general scurfiness. The hair all over the head presents the appearance of having been nibbled by a rodent, and among the many stumps one may find many new hairs, lying irregularly, thin, friable, and on microscopical examination seen to be full of fungus.

Microscopical Examination.—Though to the trained eye the recognition of microsporion ringworm of the scalp by its clinical appearances is usually easy, a microscopical examination is the one absolute method of determining the diagnosis. The technique is simple and rapid. One should proceed as follows :

1. Expose the suspected area of the scalp and look for short and broken hairs.
2. Remove several of these hairs with a pair of epilation forceps previously "flamed" to destroy any debris remaining from a previous examination.
3. Place the hairs in a watch-glass and soak them in methylated ether for three minutes to remove any oil or grease from their surface.
4. Transfer the hairs to a clean microscopical slide, and cover them with a few drops of 20 per cent. caustic potash solution. *Liquor Potassæ B.P.* being weaker is not so suitable for this purpose as a 20 per cent. solution.
5. Cover with a cover-slip and examine at the end of 5-10 minutes with a $\frac{1}{6}$ objective, the diaphragm being partially closed.

If the hair is infected by the small-spored fungus, it presents a characteristic picture. It is seen to be surrounded, particularly in its intrafollicular portion, by a sheath of small hyaline spores, mostly

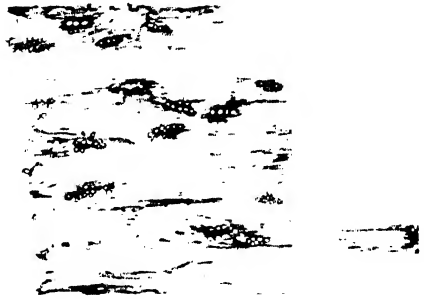


[Dr. Gladys Rutherford, del.]

FIG. 43.—Microscopical picture of hair infected with *microsporion Audouini*. perfectly spherical. They lie on and round it in a thickness of several layers, and present the appearance of a tessellated pavement or mosaic (Fig. 43). There is no attempt at linear arrangement as is the case in

a large-spored infection. By systematically altering the focus one may bring into sharp definition the superficial spores, the long or broken bamboo-like rods of mycelium lying on the surface of the hair inside the sheath of spores, the mycelium in the substance of the hair with a few scattered spores, and, lastly, by still deeper focussing, the welt of spores on the further side visible through the now transparent substance of the hair. The cuticle of the hair is broken and eroded. The typical arrangement of the spores is best seen in the intrafollicular portion of the hair. If only a terminal portion of the hair is examined, the spores, even in a case of microsporon infection, may be found in lines (Fig. 44).

2. "**Black-dot**" ringworm. This variety, though rare, is occasionally met with, and, if one fail to recognise it, may occasion an epidemic in a school. It is always caused by the *trichophyton megalosporon endothrix*. At a first glance, a child affected often appears to be suffering from alopecia areata, for its scalp is the site of one or more bald non-scaly areas. A closer examination shows, however, that the apparently bald areas are studded over with numerous black dots, which a lens reveals as stumps of hairs broken off at their point of exit from the follicles. On microscopical examination the cuticle of



[Dr. Gladys Rutherford, del.]

FIG. 44.—Terminal portion of hair from same patient as Fig. 43. The spores are arranged in lines, and might suggest a megalosporon infection.

the hair is seen to be intact, but the hair itself is packed with rounded or cubical pieces of mycelium arranged linearly, and hyaline spores somewhat larger than the microspores, arranged in a chain-like way.

This variety of ringworm tends to be very persistent.

3. **Pustular Ringworm of the Scalp—Kerion Celsi.**—In all cases of ringworm of the scalp the fungus affects the skin primarily, and the hair secondarily, finding its way into the follicles and invading the hair in its intrafollicular portion. This being so one might *a priori* expect that every case of ringworm of the scalp would be associated with some degree of folliculitis. Experience, however, teaches that an obvious folliculitis is the exception rather than the rule. When folliculitis does occur it may be of two varieties—a mild pustular type

in which a few follicles scattered over the scalp are the seat of suppuration, or an acutely inflamed variety which converts a ringworm patch into a boggy swelling discharging sero-pus from the gaping follicles which cover it (Fig. 45). This is *kerion*, and, if one may so express it, it is one of nature's methods, which man has tried to imitate by the croton oil treatment, for curing ringworm of the scalp. The follicular suppuration loosens the hairs which are easily pulled out or which fall



FIG. 45.—Kerion.

[Photo by Dr. Oram.]

spontaneously. Further, the purulent inflammation would seem to destroy the fungus, for it is very difficult to discover any trace of it on microscopical examination of one of the hairs. If seen at all it is as a few fine filaments of mycelium clinging to the surface of the hair, which is usually not broken off and stumpy as is the case in ordinary scalp ringworm.

In the presence of such a raised boggy swelling as kerion presents, one may feel tempted to incise it; but this should not be

done. Small local areas of permanent baldness with depressed scars, sometimes pitted with sunken follicular orifices may be left by severe kerion.

The fungus in these cases of pustular ringworm is sometimes the endothrix variety, but in the majority of cases the ectothrix variety, and rarely (I have seen only three cases) the microsporon.

DIFFERENTIAL DIAGNOSIS OF RINGWORM OF THE SCALP

1. Confusion may arise with *Alopecia areata*.

Microsporon Ringworm.	Black-dot Ringworm.	Alopecia Areata.
Scaly patches.	Smooth patches with black dots.	Smooth shining patches.
Patches show short broken friable hairs.	Black dots are seen to be hairs broken at exit from follicles.	Hairs completely absent from patches, or, if present, are short, but do not break off on attempts at removal.
No " mark of exclamation " (!) hairs.	No ! hairs	! hairs at periphery.
Microscope reveals fungus in scales and hairs.	Fungus present in stumps.	No ringworm fungus present.

2. *Favus*.—The characteristic, sulphur-coloured, honey-comb scutula of favus, if present, should prevent all confusion. But in the cicatricial stage of favus, when the scutula have disappeared, confusion with tinea may arise. Distinguishing features are the definitely atrophied condition of the skin after favus, and the coarse, strong, cocoa-nut fibre hairs which do not break on epilation, springing sparsely from the atrophic skin.

3. *Pityriasis alba* or *Seborrhæa sicca*.—The scattered irregular patches of pityriasis alba on a child's head may suggest ringworm. But the hairs growing through the scales are seen to be of normal length and texture ; they are not brittle, do not break on attempts at epilation, and on microscopical examination are seen to be fungus-free. It is the path of wisdom, however, to regard with strong suspicion any scurfy patch on a child's head, and to make more than one careful microscopical search of scales and hairs, before declaring that the condition is not ringworm.

4. *Psoriasis of the scalp* in a child may suggest ringworm. Here the same differential points as are applicable in pityriasis alba are of value. Further, the scales in psoriasis are larger, flatter, and of a different texture than in tinea, and they are fungus free. The presence of psoriasis on other parts of the body should also aid to a correct diagnosis.

5. *Impetigo of the scalp* may be confused with kerion. But impetigo is a superficial condition; the exudate is a sticky gummy fluid which oozes from the surface, not from the follicles, and there is no infiltration of deep tissues.

Prognosis.—This is always good, though unless the patient is treated with X-rays a cure is invariably slow. The disease tends to disappear at puberty. Kerion may leave bald patches. A child with ringworm is a potential source of infection to all other children with whom he comes in contact.

Treatment of Ringworm of the Scalp.—Many remedies have been suggested, and from time to time some new form of treatment or some modification of an old one is acclaimed as rapid, efficacious and certain. Long experience and the careful trial of some of these vaunted quick cures has driven me to the painful conclusion that their enthusiastic sponsors are usually youthful optimists who examine their patients with the eye of faith rather than the lens of the microscope. There is no rapid method of cure for tinea tonsurans by local applications. If a local application is to succeed at all it must be used with thoroughness and for a prolonged period.

Iodine, which will cure tinea on the glabrous skin in a day or two, fails in tinea of the scalp if it be applied in watery or alcoholic solution because it does not succeed in penetrating into the hair follicles, or into the hair. But certain oily or ointment preparations of iodine are of value, *e.g.* colloidal iodine oil, iodine-vasogen and iodox. Among ointments I advocate Unguentum Sulphuris Iodidi, or an ointment containing 20 grains each of precipitated sulphur and salicylic acid in an ounce of benzoated lard. If goose grease is procurable it makes a better excipient than benzoated lard, as it has greater powers of penetration.

Colcott Fox was a strong believer in an ointment consisting of equal parts by weight of common salt and vaseline. If well rubbed in it produces a folliculitis which causes shedding of the hair and removal of the fungus. But it may set up a very troublesome dermatitis of the scalp. Treatment with croton oil had a great vogue some thirty years ago. It may be used in two ways, either pure or in a 10 per cent. ointment. If used pure a drop may be painted on the ringworm patch. It sets up an acute inflammation, with follicular pustulation. The pustules should be opened, the parts bathed with warm boracic lotion, and the application of croton oil repeated, daily or on alternate

days, till an artificial kerion is produced, so that the hairs are loosened and shed, or can be epilated without breaking. Croton oil ointment is used in much the same way, though it is less effective. For small patches, or isolated affected hairs, needling with croton oil, as recommended and long practised by Aldersmith, is useful. For this purpose a special grooved needle, or perhaps better, a fine beading needle, in which case one uses the end with the eye, is employed. It is dipped in croton oil, and inserted carefully into each follicle, with a view to setting up a folliculitis.

Whitfield recommends an ointment containing gr. xlv. of salicylic acid in $\bar{5}$ i. of unguentum hydrarg. nitratis. The affected part should be anointed, with firm friction, twice a day and the scalp washed twice a week. In some cases this treatment causes the hair to fall, without suppuration. If it sets up a pustular folliculitis it must be given up at once. His other favourite ointment contains $\bar{5}$ i. benzoic acid, $\bar{5}$ ss. of salicylic acid, $\bar{5}$ iv. of lanolin and soft paraffin to $\bar{5}$ i. It should be rubbed in twice daily.

Elford * recommends the following method, for which he claims excellent results.

The affected area is shaved and cleansed with ethereal soap solution, and then carefully rubbed with a piece of lint moistened with Liquor Potassæ. The part is then dried with absorbent cotton-wool, and sprayed with ethyl chloride for about thirty seconds. When the ethyl chloride has evaporated the part is painted with tincture of iodine. The procedure—with the exception of the shaving—should be carried out night and morning for three days, and thereafter once daily for four or five days. A mild folliculitis results, and the infected hairs fall out or may be removed.

Wallace Beatty had a high opinion of the following lotion: tincture of iodine, $\bar{5}$ i.; glycerini acidi carbolic, $\bar{5}$ i.; sulph. precip., gr. xv.; spirit etheris to $\bar{5}$ i. The lotion was applied twice a day, being pressed in with a pledget of cotton wool or lint fixed on the end of a cork. The hair should be cut short and kept short; and during the treatment the scalp should not be washed.

Whatever local remedy is employed, its success depends as much upon the method of its use as upon any inherent virtue it may possess. Certain general principles should be observed in applying any local treatment. They are:—

1. Ascertain the number of areas to be treated.
2. If there is one only, shave it carefully, and shave also a circle $\frac{1}{2}$ inch broad outside it. If there are more than two areas, shave the whole scalp. The shaving should be repeated once a week.
3. Night and morning rub in the ointment prescribed for twenty

* *British Medical Journal*, June 1920, p. 867.

minutes, unless it be a violent irritant like croton oil ointment. The ointment must be rubbed in firmly to promote penetration. Mere smearing on is useless.

4. If the whole scalp has been shaved it may be washed with an antiseptic soap once a week. After drying, the whole scalp should be painted with iodine liniment, so that any fungus conveyed from an infected area to a healthy one may be destroyed while it is still on the surface of the skin.

5. If only one area has been shaved, washing of the whole scalp should be reduced to a minimum—say once a month—for it is almost impossible to destroy effectually any fungus that may have been washed into the thicket of sound hair.

6. The child should wear constantly a washable cap of linen or cotton, with washable linings for his outdoor caps. He should not attend school, nor mix with unaffected children under the age of fifteen. In a family where only one child suffers, it is advisable to cut and keep short the hair of all the other children, and they should use a protective ointment such as Ung. Sulphuris Iodidi.

7. Every month, or oftener, make a careful microscopical examination of hairs from the affected area. The hair should not be allowed to grow till all trace of fungus is gone.

Treatment of Kerion.—As a rule kerion is rapidly curable. The hair round the boggy swelling for half an inch should be shaved, and the affected area should be painted daily with tincture of iodine and dressed with starch and boric poultices covered with oiled silk. Every day the loose hairs should be removed with forceps. Many will come out on the poultice. When the suppuration subsides, the disease will probably be found to be cured.

Treatment with Vaccines.—I have made prolonged trial of vaccines derived from cultures of ringworm fungus, but have abandoned their use because the results obtained were not commensurate with the inconvenience caused to the children.

Thallium Acetate for Ringworm of the Scalp.—Recently some experiments have been made with thallium acetate administered by the mouth. This drug, given internally, has the power of causing the hair to fall temporarily. The correct dose is 8–9 mg. per kilo of body weight, for all ages administered in two ounces of sugar and water. Sometimes severe general symptoms with abdominal pain and diarrhœa occur. Ten to fifteen days after the administration of the drug the hair begins to fall, and epilation is complete in twenty-five days. Buscke of Berlin has carefully worked out the dosage and pharmacology of the drugs. A few successful cases have been demonstrated in Dublin and London.

But until it can be proved that the selective affinity of thallium

acetate is definite and absolute, and that it does not inhibit even temporarily the growth of other young cells in the body besides those of the hair papillæ, the treatment seems to me too hazardous to be adopted as a routine.

X-RAY TREATMENT

All treatment of ringworm by local applications is tedious and uncertain—testing alike the patience of doctor and patient. The most rapid and certain means of cure is treatment with the X-rays. It must be clearly understood that the X-rays do not kill the ringworm fungus. They act by interfering with the vitality of the hair papillæ. They produce a temporary suspension of their activity, so that the hairs become loose and fall out, in from 17–24 days, bringing with them a large amount of fungus. The fungus left behind in the follicles may then be destroyed by means of antiseptic ointments, or by applications of such agents as iodine, which set up a desquamation that removes any fungus left behind. The treatment of ringworm of the scalp by the X-rays was introduced by Sabouraud. It is a matter of considerable delicacy, and should only be undertaken by those who have a special knowledge of X-ray therapy. In inexperienced or careless hands the method is dangerous. If too small a dose is given, the hairs do not fall; if too large a dose is administered, permanent baldness of greater or less extent may ensue. Some patients undoubtedly exhibit an idiosyncrasy to the rays, and, even with accurate dosage, areas of permanent baldness may be left. But this idiosyncrasy is rare.

The Kienböck-Adamson technique, whereby epilation of the whole scalp is brought about by the radiation of five areas, is that usually followed. The treatment should be entrusted only to an X-ray expert.

Ringworm of the Beard : *Tinea Barbæ* : Hyphogenic Sycosis

Ringworm of the beard is usually due to the *Trichophyton ectothrix*, and occasionally to the *endothrix*, and horses or cows are common agents from which the disease is transferred to man.

Symptoms.—The disease may be superficial, producing only a few reddened scurfy patches on the surface of the skin, and not invading the follicles to any noticeable extent, though broken and infected hairs may be discovered.

Most often, however, the fungus invades the follicles and sets up a violent inflammation, producing a condition analogous to kerion as met with on the scalp, but generally much more severe. The affected area exhibits a number of brawny infiltrated granulomatous swellings

which resemble blind boils (Fig. 46). Frequently the horny layer is absent from the truncated apices of these elevations, in the centre of which one finds a patulous follicular orifice filled with pus through



FIG. 46.--Tinea Barbae; Hyphogenic Sycosis.

which a stumpy hair projects. These hairs are loosened by the supuration around them and are easily extracted. Pressure applied to one of the elevations causes more pus to exude. The discovery of

the fungus is often difficult. It may, occasionally, be detected as a fine mycelium in a specimen of the pus. The hairs from acutely suppurating follicles do not as a rule show it, but it may be found in hairs extracted from the periphery of the "boils" where suppuration is not active. In an extensive case of ringworm of the beard there may be considerable pain and discomfort.

The differential diagnosis from coccogenic sycosis is important (see p. 42).

Treatment.—The suppuration tends to kill the fungus, and so to bring about a cure. Applications of tincture of iodine promote the resolution of the inflammatory infiltration, and starch and boric poultices, applied after the iodine, contribute greatly to the comfort of the patient. Loose hairs may be removed with forceps.

The ideal method of treatment is an epilation dose of the X-rays, followed by starch and boric poultices. The rays soothe the great irritation, promote absorption of inflammatory products, and remove the bulk of the fungus by causing the hairs to fall. After epilation, the skin may be rubbed daily with an ointment containing—

R. Hydrarg. Oleatis, grs. x.
 Ichthyol, grs. iv.
 Ung. Zinci Ox., ad \bar{z} i.
 M.

If the attack has been severe, some pitted scarring, which tends to become less noticeable in time, may be left.

Ringworm of the Glabrous Skin: *Tinea circinata*

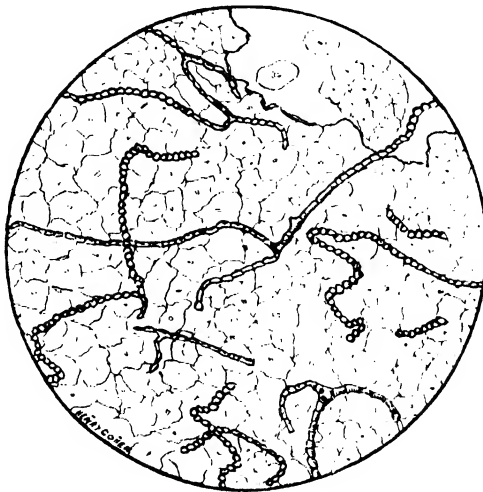
1. In children suffering from ringworm of the scalp it is not uncommon to see, just beyond the hair margin on the neck or forehead, a number of small, scaly, reddish-pink, slightly raised patches of skin. On examining scales from these under the microscope one finds them riddled with the microsporon fungus.

2. ***Tinea circinata*** occurs as reddish or fawn-coloured squamous plaques circular in form and often slightly vesicular at the external edge. The lesions spread centrifugally, clearing in the centre, which may remain slightly pigmented. The peripheral spread leads to the formation of a definite ring shape, and as the lesions are usually multiple, the centrifugal extension leads to the coalescence of adjacent rings. The confluent edges clear up, and polycyclic figures may be formed. There is always a slight inflammatory reaction where the fungus has attacked the skin, but, in this variety of ringworm, infiltration is extremely rare. Sometimes the vesiculation at the edge of the lesions may be very marked, and occasionally becomes pustular.

The fungus—endothrix or ectothrix, but sometimes microsporon—

may be found on a microscopical examination of the scales (Fig. 47). Lanugo hairs taken from affected areas are usually fungus free.

3. **Conglomerative folliculitis**, or agminate folliculitis, is the name given to a pustular form of ringworm affecting the glabrous skin. The fungus is the ectothrix variety, and infection is usually from the horse. The lesion, which is generally single, varies in size from a florin to a five-shilling piece, and is swollen, infiltrated, red, and definitely margined. Its surface is irregular, and is covered by vesicles and pustules, or by gaping follicles from which pus or serum exudes either



[Dr. Henry Cohen, del.]

FIG. 47.—*Trichophyton megalosporon* from a case of *Tinea circinata*.
Obj. $\frac{1}{16}$; oc. $\times 5$.

spontaneously or on pressure. The lesion develops rapidly, is often painful, but is not usually accompanied by any lymphangitis. The fungus is difficult to find, but may be discovered among the pus, or along the shaft of a lanugo hair.

4. **Eczema marginatum of Hebra**, or **Tinea cruris**, is a variety of ringworm affecting primarily the genito-crural region, and often spreading to adjacent parts. In the East the condition is known as *Dhobie's itch* (washerman's itch), as it is believed to be spread by underclothing infected by the native laundryman. The variety of fungus is a highly resistant one, the *epidermophyton inguinale*. The lesions, which are often extremely irritable, vary in colour from a rose pink to a vivid red (Fig. 48). The borders, which are definite, are usually squamous, and of a brighter red than the centres. Adjacent lesions run into each other so that a large area on the inner side of the thigh, and extending on to the scrotum, may be involved. Secondary changes due to maceration by retained sweat, or to infection by scratching,

may obscure the clinical picture by causing it to assume the appearance of a vesico-pustular, weeping or crusted eczema. The fungus may be found in scales, pus, or crusts, and may find its way between the toes or into the armpits.

5. **Tokelau ringworm ; tinea imbricata.**—This is a form of ringworm met with chiefly in the East—in the Malay Peninsula and Polynesia. It is due to the *Endodermophyton concentricum* and *E. indicum*, and presents a striking clinical picture. The lesions consist of a series of concentric brown and white scaly rings, which alternate with each other. The disease may be extensive, and cover the whole trunk. Polymorphic and polycyclic lesions are formed by the coalescence of adjacent concentric rings. If the eruption is extensive, the itching which always accompanies it may be intolerable.

Before leaving the subject of ringworm of the skin, something should be said as to ringworm affecting the hands and feet, where the disease exhibits certain special characteristics. The frequent washing of the hands tends to make ringworm lesions of the fingers or palms lose their typical appearance, and come to resemble a squamous dry eczema (Fig. 49). But they always remain definitely margined, a feature which should awake suspicion as to their true nature. Undoubtedly, many cases of ringworm of the hands are never diagnosed.

On the palms, the disease begins as a vesico-pustule, which after rupture dries up and becomes scaly. The lesion spreads peripherally by the formation of more tiny vesicles, which also dry up to form a scale, and when the infection has lasted for some time one finds one or more rounded or irregular dry scaling areas of some size, definitely margined, their edges consisting of a slightly raised and partially separated layer of somewhat larger scales (Fig. 50).

In cases of long standing, the disease may affect the whole of the palmar surface of the hands and fingers, the skin of the opposed surfaces of the fingers, the back of the hands, and even the nails. The affected skin looks dry, and somewhat dirty. It is hard to the touch, for there is some degree of hyperkeratosis, and frequently there is



FIG. 48.—Tinea cruris.

some fissuring, and the condition often suggests strongly a chronic scaly eczema, or even an eczema rimosum. But a microscopical examination of the scales reveals the fungus.



FIG. 49.—Ringworm affecting palm and fingers.

Eczematoid ringworm of the toes and soles is at present a somewhat urgent problem in some of our public schools. The fungus is an epidermophyton—and the mischief may occur independently of any infection of the groins. Attention may first be called to the trouble by a vesicular outbreak resembling dysidrosis, or the onset may be insidious without acute manifestations. The affected skin between the toes is blanched, sodden, partially detached, and sometimes fissured. Underneath the sodden epidermis there is a pale red surface. If some of the sodden epidermis is scraped off, macerated thoroughly in strong (20–30 per cent.) caustic potash after washing with ether, and examined

under the microscope, a long sporulated mycelium is seen. The disease is extremely rebellious to treatment. Whitfield's salicylic and benzoic acid ointment often helps: 10 per cent. ointment of chrysarobin may be used. The penetration and action of the ointments may be aided by scraping the sodden epidermis between the toes with a curette. To help its removal it may first be painted with caustic potash or moistened with peroxide of hydrogen. Ung. Iodi, Tincture of



FIG. 50.—Ringworm affecting back of hand and fingers. Thumb-nail also affected.

Iodine, and 2-6 per cent. solution of silver nitrate in Spirit Ether Nit. may also be employed. Cotton socks which can be disinfected or destroyed should be worn inside the ordinary socks. Treatment to be successful must be carried out with great thoroughness.

TREATMENT OF RINGWORM OF THE GLABROUS SKIN

The treatment of *Tinea circinata* is easy. The patches should be well painted night and morning with tincture of iodine for three days.

After the third day the cure may be completed by the application of salicylic acid ointment. When the iodine treatment is over, the under-clothing should be completely changed, and the same precaution should be repeated after four days' treatment with the ointment.

The "conglomerative folliculitis" type is best treated by the application of tincture of iodine, followed by the application of starch and boric poultices. When the suppuration ceases, the cure may be completed by the use of *Unguentum Sulphuris Iodidi*.

Tinea cruris is often very difficult to treat, partly because of the high resistance of the organism, the specially suitable conditions for its growth to be found in its seat of election, and partly too through the frequency with which secondary eczematous changes accompany it. If there is a crusted or weeping eczema, remove the crusts with a mild salicylic ointment, grs. x.- $\bar{3}$ i., and dry up the oozing surface by applying a lotion of 1-2000 perchloride of mercury, or colloidal silver 1-4000.

When the moisture has been got rid of one may apply tincture of iodine night and morning; but sometimes this is not well tolerated in this region. *Unguentum Sulphuris Iodidi*, well rubbed in at night, sometimes gives good results. It should be wiped off in the morning, and the parts should then be dusted copiously with a dusting powder as follows :--

R. Camphor, grs. xv.
 Spirit. Vini Meth., q.s.
 Acidi Salicylici, grs. xx.
 Pulveris Talci Venet., $\bar{3}$ i.
 M.

In very obstinate cases an ointment containing 10-15 grains of chrysarobin may be used. It should be rubbed in night and morning, and the parts protected from contact with the other clothing by means of a short pair of bathing drawers. When the skin reacts with a lively erythema, the chrysarobin should be stopped, and the dusting powder already mentioned may be applied.

Possibly, however, the cleanest and most effective treatment is the combination of benzoic and salicylic acids suggested by Whitfield—

R. Acidi Salicyl., grs. xv.
 Acidi Benzoici, grs. xxv.
 Adipis Lanae, $\bar{3}$ ss.
 Paraffinum Molle, ad $\bar{3}$ i.
 M.

This should be applied night and morning, and as the heat of the body tends to make the ointment run, it is advisable after applying it to dust the parts over with some talc powder and to make the patient wear short bathing drawers.

Tokelau ringworm may be treated with chrysarobin ointment (grs. xxx.-5i.), or, as Castellani has suggested, with a paint of resorcin in tincture of benzoin. As the disease is always very extensive, and both resorcin and chrysarobin may give rise to poisonous symptoms from absorption, it is best to treat only a limited area with these remedies at a time.

For ringworm affecting the palms and soles there is nothing to surpass Whitfield's combination of benzoic and salicylic acids.

If there is great thickening of the epidermis, or if the ointment does not seem to penetrate into the sodden skin between the toes, its use may be reinforced by the application of liquor potassæ (B.P.), or liniment of iodine.

The boots should be disinfected with formalin or lysol ; all woollen socks worn by the patient should be destroyed, and during treatment he should wear cotton socks, which should be changed frequently.

Ringworm of the Nails : *Tinea unguium*

Ringworm of the nails is very frequently associated with ringworm of the skin of the hands. It may be associated with ringworm elsewhere, e.g. in the beard area ; or it may occur among doctors, nurses, mothers, or ostlers who have had to treat patients or animals affected with tinea in any form.

Symptoms.—The disease is more common in the nails of the hands than the feet, and usually affects only two or three fingers, though I have seen all the nails of both hands seriously invaded. Most often, infection is through the nail-bed, which is invaded by fungus which finds its way under the free margin of the nail, where it produces a greyish-black hyperkeratosis, which pushes the nail up from its bed, and which may extend far back towards the root of the nail. Ultimately the fungus invades the nail-plate itself, and gradually converts it into a dirty-yellowish, thickened, irregularly furrowed plate, friable and brittle, and lacking the translucency of a healthy nail.

Sometimes the nail is invaded by extension of ringworm from the skin. In such cases the mischief begins either at the lateral border or the base of the nail.

The fungus is invariably a *trichophyton*—never a *microsporon*.

Diagnosis.—The one certain sign is the discovery of the fungus. A scraping from the heaped-up scaling mass beneath the nail, or a fragment snipped from an obviously diseased portion of the nail, should be washed in ether, boiled in 20–40 per cent. caustic potash solution, and examined microscopically, when the mycelium, if present, will be found with little difficulty.

Eczema affecting the nails may produce changes resembling those

characteristic of ringworm, but it does not give rise to that lamellar friability usually found in *tinea unguium*.

Psoriasis does not produce friable, but extremely strong and hard nails, often difficult to cut, while the tiny pin-point depressions found on the surface of the nail, the presence of psoriasis elsewhere, and the absence of any fungus set all doubts to rest.

Prognosis.—A cure is always uncertain, and very slow unless radical measures are taken. One affected nail is a danger to all the others.

Treatment.—If a nail is extensively diseased, complete removal under a general anæsthetic, with thorough scraping of the nail-bed and meticulous disinfection with linimentum iodi, offers the best hope of a speedy cure. While the new nail is forming, it is an excellent idea to keep the end of the finger dressed with Gram's solution of iodine, under a rubber finger-stall.

If the disease is not extensive, an attempt may be made to treat it without removal of the whole nail. If the mischief is in the nail-bed, beneath the free edge of the nail, cut the nail as short as possible, soften the thickened mass of horn cells beneath it with liquor potassæ and scrape as much away as possible, painting the rest night and morning with tincture of iodine. If the lunule of the nail alone is affected, scrape it thin with a piece of glass, softening it if need be with liquor potassæ, and then paint it thoroughly night and morning with tincture of iodine, dressing it in between with Gram's iodine solution under a rubber finger-stall.

Craik * claims good results from the following treatment : Scrape the nails every night and apply this lotion :—

R. Acidi Salicylici, ʒi.

Spirit. Vini Meth., ʒiiss.

M.

The lotion should be painted on again in the morning without a preliminary scraping.

But we must remember that the fungus is well protected by the horn cells, and any treatment but removal of the nail is tedious and often disappointing.

Favus : Tinea favosa

Favus is rare in England, but not uncommon in some parts of Scotland, *e.g.* Edinburgh. It is widely spread through Central Europe, Poland, and Russia.

The causative fungus is called, after its discoverer, the *Achorion Schoenleinii*.

Etiology.—The fungus, which can readily be demonstrated by

* *British Medical Journal*, Feb. 1920, p. 185.

the ether-potash method used for the detection of the ringworm fungus, consists of a mycelium of short or long rod-like or sinuous segments, some of which are empty tubes, while others contain spores. Between



[Photo by Dr. Oram.]

FIG. 51.—Favus affecting scalp and neck.

Note the honeycomb crusts on neck.

the mycelial threads, as well as within the compartments produced by the transverse septa of the mycelium, lie round, oval, or irregularly shaped spores.

The disease is contagious, but not nearly so highly contagious as ringworm, and is communicated directly by contact with an affected person, or it may be transmitted from animals, *e.g.* mice, dogs, cats, or birds, to man. Transmission by mediate contact also occurs.

Description.—Favus may affect the hairy scalp, the glabrous skin, the nails, and sometimes the mucous membranes. It usually begins in childhood, attacking either sex, and is most often met with on the scalp. The earliest symptom, which often escapes notice, is a slight inflammatory and scaly reaction of the skin of the scalp where



[Photo by Dr. Oram.]

FIG. 52.—Favus of scalp. Note the coarse fibrous hair.

the fungus has invaded it. Favus shares with *pityriasis versicolor* the curious distinction that the clinical appearances that strike the eye are not actual lesions produced by the fungus, but the heaped-up fungus itself arranged in characteristic fashion (Fig. 51).

Usually the first symptom noticed is the appearance on the scalp of one or more small yellowish points situated in the follicular orifices, and pierced centrally by a hair. These points look like pustules, but on puncturing the thin cuticle that covers them no moisture exudes, and on removing a fragment of the yellowish material for microscopical

examination, one finds one is dealing with a virtually pure culture of the fungus.

The yellowish points grow in size ; the fungus pushes its way down the hair follicle, breaks through the cuticle and invades the stroma, along which it grows. Hairs affected by favus do not break short like ringworm hairs, but they become brittle, are easily extracted from the follicles, and look lustreless and dull. The deposits of fungus in the follicular orifices continue to grow, and ultimately form the typical "crusts," or **scutula**, of favus—sulphur-yellow or straw-coloured masses with a central depression, through the centre of which the hair, if not already destroyed, projects. The scutula are firmly bound down to the scalp, and are covered by a thin cuticle which must be broken through before one of them can be removed. Round each scutulum the skin is reddened, and underneath each, it is depressed and covered with a thin, shiny epidermis ; or this may be lacking, and the underlying dermis is exposed. Each scutulum may remain discrete, or adjacent ones may coalesce, so that sulphur-coloured masses of various extent are formed. The action of the fungus and the interference with the vitality of the hair papilla, caused by the pressure of the tightly adherent scutula, kill the hair and destroy the follicles, so that more or less extensive baldness is produced. The baldness of favus presents characteristic appearances. The scalp is atrophic, smooth, sometimes difficult to move on the underlying bone, and often of a dusky red colour. It is studded over with short coarse hairs, which lie irregularly, and which, on touch, suggest cocoa-nut fibre (Fig. 52). The baldness is permanent, for the hair papillæ have been destroyed.

Favus of the scalp, if at all extensive, has a characteristic mousey odour, which is easily recognised. As a rule the disease is painless, though it may be accompanied by great irritation.

The disease may extend to the neck and shoulders, through the fungus dropping from the scalp. Sometimes it may appear on other parts of the body, where the characteristic sulphur-coloured masses of fungus, with their depressed centres, leave no doubt as to the diagnosis (Fig. 53).

Diagnosis.—This can usually be made from the clinical appearances, but in the absence of scutula the fungus is readily discovered in the hairs—sometimes lying on the surface, frequently between the cuticle and the hair-shaft, in the root sheath and between the cells of the cortex, where it may be seen as long threads of mycelium or as chains of spores. A hair invaded by favus fungus usually contains some air-bubbles.

Prognosis.—The disease is most intractable, and may last from childhood to middle age, leaving incurable partial baldness behind it. Favus of the glabrous skin is, however, easily curable.

Treatment.--To remove the scutula--which, as already stated, are simply masses of fungus--use a 10 per cent. salicylic acid and



FIG. 53.--Favus affecting the thigh. The characteristic appearances of the scutula are well shown.

vaseline ointment, or wash repeatedly with spirit soap lotion. Thereafter, one may try to destroy the fungus in the deeper parts of the

follicles and the hairs by oleate of mercury ointment, 10 grains to the ounce, or by a 5 per cent. β -naphthol ointment, or by an ointment containing 10–20 grains of sulphate of copper in the ounce. But all are of little avail.

The most effective and only reliable treatment is complete epilation of the affected areas with the X-rays. After the hair has fallen, the scalp should be rubbed thoroughly, night and morning, with copper sulphate ointment (v.s.) in order that any fungus still lying in the follicles may be destroyed. Favus on the glabrous skin is curable by thorough washing, and the application of copper sulphate ointment.

Favus of the Nails : Onychomycosis favosa

Favus attacks the nails, the fungus finding its way under the free edge of the nail in the act of scratching. Here it grows, forming a dirty yellowish mass of friable debris between the nail-bed and the nail-plate, raising the nail up and invading its substance. An affected nail is thickened, opaque, and brittle. The fungus is easily found among the debris underneath the nail, and in scrapings from the nail itself.

Treatment.—The only satisfactory treatment is complete removal of the affected nail, followed by careful curetting and disinfection of the nail-bed.

If the patient will not allow extirpation of the nail, the condition may be treated by scraping the nail thin, clearing out as much of the debris beneath it as possible, and painting the parts night and morning with—

R. Hydrargyri Bichloridi, grs. v.
Spiritus Vini Rect., \bar{z} i.

M.

or by keeping the end of the finger covered with an indiarubber finger-stall packed with copper sulphate ointment, grs. x– \bar{z} i. But any measures short of extirpation are tedious and unsatisfactory in the extreme.

Tinea versicolor—Pityriasis versicolor

Definition.—Pityriasis versicolor is a parasitic disease of the skin due to a fungus—the *microsporon furfur*.

Etiology.—The fungus attacks the outermost layers of the stratum corneum, and is readily seen on microscopical examination—with not too bright illumination—of scrapings from the affected parts, prepared by the ether-potash method. (Liquor potassæ B.P. is strong enough for this examination.) The fungus is seen to consist of short rod-like or bent pieces of fine mycelium, between which lie grape-like clusters of round or oval spores. The grape-cluster arrangement of the spores is very characteristic. The fungus grows most luxuriantly on a moist

warm skin—and in the old days, when every phthisical patient was overclad and kept in hot, stuffy rooms, pityriasis versicolor was very commonly met with on the chest and back of consumptives.

Symptoms and Signs.—Much of the clinical picture consists of visible accumulations of the fungus on the affected skin. The chest and the back are seats of election; the neck may be affected, the face usually escapes; the upper arms are occasionally attacked, but the hands and feet never. Obviously, therefore, the fungus has a preference for covered parts. It grows on the surface of the skin, invading the upper layers of horn cells, but it does not attack hair, nor find its way into the sweat or sebaceous follicles. The lesions consist of yellowish-brown slightly scaling macules, which frequently itch, but do not provoke any inflammatory reaction. The colour of the lesions has been compared by the French to *café au lait*. Spreading peripherally, usually without clearing in the centre, the lesions may run into each other, so that the whole “chest protector area” may be covered by a large sheet of fungus, broken up here and there by islands of normal skin. The borders of such an extensive lesion are sharp, but from the method of its formation irregular. The rapidity of the spread of the lesions depends on the warmth and moisture of the skin, and possibly also upon some special susceptibility of the affected individual. If untreated, the disease runs a slow and chronic course, but tends to disappear in old age. It generally commences in early adult life. Being parasitic in origin, it is contagious, though not in a high degree.

Diagnosis.—Usually the diagnosis is easy, and it is readily confirmed by microscopical examination. But I have known cases confused with *Addison's disease*, with the *melanodermia* associated with *leucodermia*, and with a *macular syphilide*. In all cases, however, apart from any other diagnostic differences, the microscopical examination of a scraping will set doubt at rest.

Treatment.—The object is to get rid of the fungus, when any symptom it may have produced will immediately disappear. Let the patient have a sulphur bath every night for four nights, and after each bath rub the affected parts with equal parts of Unguentum Sulphuris and Unguentum Acidi Salicylici.

Or paint the parts for four consecutive nights with—

R. Resorcini.
Acidi Salicylici, $\bar{a}\bar{a}$ grs. xx.
Glycerini, \bar{z} i.
Spiritus Vini Rect., ad \bar{z} i.
M.

and then let the patient take a hot bath, and apply plenty of soft soap to the area affected.

If any small patches of the disease remain, or awake into activity after the bulk of the mischief has disappeared, the application of the paint or ointment should be repeated.

MICROSPORIDES; TRICHOPHYTIDES; FAVIDES

Of recent years attention has been called by Jadassohn, and many others, to the association of ringworm, especially of the deep-seated suppurative variety, with eruptions on remote parts of the trunk and limbs, and sometimes on the face. These eruptions are most frequently lichenoid in character, suggesting lichen spinulosus, and are characterised by the sudden development of lichenoid papules of fawn, pale red, bluish or brown hue, which are most often perifollicular. They crop out suddenly, last for a few weeks, or may disappear almost as suddenly as they came. Many of the follicles exhibit a tiny corneous spine. In addition, vesicular eruptions, pustular eruptions, and punctate scarlatiniform eruptions have been described. Sometimes there is enlargement of the nearest lymphatic glands. Fungus has been found in many of the lesions—though by no means in all.

It is suggested that the spread of the infection is through the blood. The lesions are known as microsporides, trichophytides or favides, according to the nature of the fungus found at the primary site of infection.

It is obvious that we must cease to regard a Tinea infection as necessarily a local affair. Cranston Low,* who has made a thorough study of these lesions says, "In a great many cases the infection has great analogies with what occurs in infections like tubercle, syphilis, etc. When sensitisation occurs the whole reactive mechanism of the body is brought into play with the production of a marked skin hypersensitiveness, which leads to the production of the various skin reactions and rashes."

ERYTHRAEMA

Definition.—A disease of the skin due to the *microsporon minutissimum*, which affects chiefly the inner sides of the thighs adjacent to the scrotum or labia majora, which it may also invade.

Signs and Symptoms.—The lesions, which appear most often in men, are small circumscribed reddish or reddish-brown slightly scaling macules, rounded or oval in shape, situated on the upper and inner parts of the thighs, and sometimes affecting the skin of the scrotum or the labia as well. The lesions grow slowly, may coalesce and so form plaques as large as the palm of the hand. As a rule there is no itching, but if the patient perspires much there may be enough irritation to provoke scratching, which may set up an eczematous dermatitis.

The **Diagnosis** is confirmed by microscopic examination. Both mycelium and spores are fine—the former about one-half the breadth, the latter about one-half the size of those of *microsporon furfur*.

Treatment.—The lesions may be treated on the same lines as those of pityriasis versicolor; but it is important to be on one's guard against slight recurrences, which should be treated with tincture of iodine or with sulphur iodide ointment.

* "Anaphylaxis and Sensitisation," by R. Cranston Low, M.D., F.R.C.P. / Edinburgh. W. Green & Son. 1924.

Actinomycosis

Definition.—Actinomycosis is a chronic inflammatory disease due to a vegetable fungus—the *streptothrix actinomyces*, or *ray fungus*.

Etiology.—The streptothrix actinomyces is met with in nature as a saprophyte on straw, hay, oats, wheat, and barley. In horses and cattle, which acquire the disease from fodder or bedding, the ray fungus produces granulomatous tumour-like masses. In many cases of human infection it is possible to obtain a history of the habit of chewing straw or grass. In other cases the disease is probably communicated by contact with infected animals.

Signs and Symptoms.—Infection occurs through an abrasion in the skin, or more often through the mucous membrane of the mouth, from which the disease spreads to the skin. In man the chief sites of involvement of the skin are the face and the neck ; but the thoracic and abdominal integument may also be infected. Infection of the skin of the extremities is rare. The disease begins as a deep-seated nodule, which grows insidiously and slowly, and which may at first be mistaken for a tubercular deposit or an indolent acne nodule. The nodule increases in size, and the skin over it changes colour to a dark red or violaceous hue. There is practically no pain, nor any enlargement of adjacent lymph glands. After a time, the nodule softens in the centre. By this time other nodules have probably formed around it, so that there is swelling and great infiltration of the involved area, which presents a board-like hardness to the touch. The earliest nodule now ruptures through the skin, and this perforation of the integument is repeated over the other nodules, so that one or more indolent abscesses are formed, discharging freely, and often communicating with each other through intractable sinuses, so that the affected area bears some resemblance to a rabbit warren with many labyrinthine communicating subcutaneous channels. The disease may penetrate deeply, and spread from the skin to the bone, so that one may be misled into confusing a case that was primarily a cutaneous one with one which has spread in the other direction, *i.e.* from mucous membrane to bone, and from bone to skin. On examination, the pus is seen to contain a large number of greenish-grey or sulphur-yellow pin-head granules. These granules are characteristic of actinomycotic pus, and on microscopical examination reveal the presence of the ray fungus.

Microscopical Appearances.—Each sulphur-granule in the pus is a colony of the fungus, and is seen to consist of a centrally placed meshwork of mycelium, thin, intertwined, and branching, among which rounded spores may be discerned. This meshwork is surrounded by a palisade or radially arranged layer of elongated bulbous or club-shaped structures. The arrangement of mycelium and club-

like bodies is typical. Mycelium and spores stain readily with ordinary aniline dyes, and the whole structure of an actinomycotic colony is shown up well by Gram's method. The fungus is not acid-fast.

Differential Diagnosis.—All the granulomatous diseases of the skin may be confused with actinomycosis. In the early stages, differential diagnosis is often very difficult, but when the nodules break down and the sulphur-granules can be examined microscopically, the diagnosis is easily established.

Tuberculosis of the skin, beginning primarily there, or tuberculosis affecting primarily the jaw-bone or lymphatic glands below it, and spreading secondarily to the skin, are common sources of confusion. *Syphilitic gummata*, *epithelioma*, *sporotrichosis*, or a *fistula* with pouting indurated edges leading from the fang of a decayed tooth to a fenestra in the skin, may all resemble actinomycosis. Differential diagnosis must be based on the history, the manner in which the actinomycotic nodule develops, the intense infiltration which surrounds it, the characteristic appearance of the pus, and the result of a microscopical examination. It is very important to remember that in actinomycosis the adjacent lymphatic glands do not enlarge.

Prognosis.—Good, if the disease is recognised early and treated thoroughly. If not recognised early, the disease may spread extensively, secondary septic infection may occur, and toxic absorption, with progressive wasting, leading to death from exhaustion may ensue. Or deeper organs may become affected, with fatal results.

Treatment.—Surgical measures are of use at two stages : (1) complete excision in the early stage, if it is practicable, or (2) in the stage of abscesses and sinuses the free opening up of all the fistulous tracts, with thorough scraping of their walls and disinfection with tincture of iodine. But surgical measures should be an addition to, not a substitute for, treatment with Tr. Iodi or potassium iodide in large doses. Iodides alone will cure most cases, and their administration should be continued not only till the abscesses and fistulous tracks have disappeared, but until the last sign of infiltration has vanished. Careful administration of X-rays will often expedite the cure, and vaccine therapy is also useful.

MYCETOMA : MADURA FOOT

This is a chronic inflammatory disease met with in the tropics, and fairly common among the natives of India. It is due to a vegetable fungus resembling, though not identical with, the *streptothrix actinomyces*. The fungus finds its way into the skin usually through an abrasion caused by a thorn or piece of stubble. The foot is the part usually affected, though the disease may occur on the hands or knees. After a variable period of incubation, the site of inoculation becomes swollen and œdematous, and an indurated small nodule appears. This is followed by the cropping up of more nodules, blackish or yellowish of hue, on an area of swollen and discoloured skin. Some of the nodules suppurate and break down ; others remain indolent and

unchanged. Sinuous suppurating tracks spread from the broken-down nodules into the deeper structures of the foot, which becomes greatly swollen and distorted. The sole flattens; the toes become dorsiflexed, and the mischief spreads to the bones, producing caries and necrosis, and may extend up into the leg. There is but little pain, the lymphatic glands are not involved, and there is practically no interference with the general health.

The pus discharged contains yellow, black, or reddish granules, in which the mycetoma fungus is found. There are slight differences in the characters of the fungus found in the various-coloured granules; but all belong to the streptothrix class, and some of them, especially those found in the yellow and black granules, closely resemble the streptothrix actinomycetes.

The disease is extremely chronic, and never undergoes spontaneous cure. It does not involve internal organs, and rarely, if ever, is the direct cause of death.

Treatment.—If the foot is extensively affected, amputation well above the ankle is indicated. If the mischief is very local, excision or thorough scraping and disinfection with iodine may be tried. Iodides and the X-rays are usually of little avail.

SPOROTRICHOSIS

This comparatively rare disease was first described in Europe by de Beurmann. Cases had previously been described in America by Schenck. A fair number of cases have been seen in Britain: a large number in France.

Definition.—Sporotrichosis is a granulomatous disease characterised by the formation of multiple abscesses or ulcers of the skin and subcutaneous tissues, and due to a vegetable fungus, the *sporothricum*.

Etiology.—The sporothricum responsible for the disease is found in nature upon such vegetables as cabbage and lettuce, or upon grass and hay, and is implanted in the human skin through a wound or abrasion. De Beurmann reports a case following a parrot bite; Sutton, one following a peck from a chicken. In both the probable connection with vegetables is obvious.

The fungus may be cultivated from any of the lesions found on the skin in the disease. It grows at room temperature on Sabouraud's medium, appearing in from a week to ten days as white woolly cultures, which spread with moderate rapidity. The growths become depressed in the centre, while the periphery becomes folded or crinkled, and the colour changes, passing progressively from white to fawn, from fawn to chocolate-brown, and deepening further into a brownish-black. The colonies pass through this gamut of colour-changes in about three weeks. A specimen of the growth examined microscopically shows a fine mycelium and minute round or oval spores.

Signs and Symptoms.—The sporothricum (*Schencki-Beurmanni*) usually affects the skin and subcutaneous tissues only, but it may invade the lymphatics, and attack the muscles, bones, and deeper organs such as the lungs. It has been found in the blood-stream of persons suffering from skin manifestations only.

When it attacks the skin—usually of the extremities or the face—it produces one or many indolent nodules, which sometimes remain localised, or sometimes spread over the body. The nodules are rarely larger than a nut, and are at first hard elastic tumours, movable under the overlying skin, which retains its normal appearance. By and by the skin becomes involved, becomes adherent to the nodule, and assumes a reddish or purple hue. Later, the nodule softens in the centre, the skin over it gives way, and an

indolent open abscess, discharging yellowish-white pus through a fistulous track, develops ; or, through the confluence of adjacent abscesses, an ulcer of irregular shape, with livid undermined edges, is formed (Fig. 54). Adjacent abscesses may communicate through tortuous sinuses. Pain, if present at all, is usually slight, and there is little, if any, systemic disturbance. But occasionally, if there is a generalised blood infection, there may be considerable fever, and pain suggestive of acute rheumatism. Sometimes the nodes disappear spontaneously without breaking down ; sometimes the open lesions also disappear spontaneously, but as a rule they are very persistent. The mucous membranes may be attacked as well as the skin.

Diagnosis.—This is always difficult, because of the close resemblance of the lesions to tubercular or syphilitic lesions. But the fungus can often be recognised microscopically in a specimen of pus taken from one of the lesions, and on culture it presents the appearances already described. Further, the Wassermann reaction is negative, as are also the tuberculin tests ; and the blood serum of a person suffering from sporotrichosis will agglutinate the spores of the sporothricum in a dilution of 1:200.

Prognosis. Always good if proper treatment is adopted.

Treatment.—Locally, apply ointments or lotions of iodine ; or pack the abscess cavities and fistulous tracks with crystalline iodoform. Internally, potassium iodide or sodium iodide in large and increasing doses, to the limits of tolerance, should be administered. The internal treatment should be continued for some weeks after the visible lesions have disappeared.



FIG. 54.—Sporotrichosis : ulcerating stage

YEAST INFECTIONS OF THE SKIN

Yeast cells may be found on many normal skins. *Oidium albicans*, which belongs to the yeast family, causes thrush in infants, characterised by white, slightly adherent membranous deposits on a reddened base on the buccal mucosa. A suckling thus affected may communicate thrush to the nipples of its mother, where it appears as a reddish scaly eruption resembling eczema. Lesions produced by *oidium albicans* have been described on the face, thighs, buttocks, perineum, and vulva of infants suffering from thrush in the mouth. The skin lesions are scaly, greyish-white or reddish, and are usually definitely margined. They look like ringworm lesions, but no ringworm fungus is found in the scales, and on culture their true nature is revealed.

Whitfield has described an *intertriginous yeast infection* resembling an ordinary eczema intertrigo, and recently Greenbaum and Klauder * have recorded seven cases of interdigital yeast infection (*intertrigo saccharomycetica*). Their patients presented two main types of lesions—one a dry lesion, in which the epidermis was smooth, glistening and thinned, so that the brightly reddened dermis was visible through it; and the other a moist lesion, consisting of a mass of undermined sodden and white epidermis. The infection was readily cured by the application of 10 per cent. tincture of iodine or a 1 per cent. chrysarobin-iodine ointment, provided the skin was kept dry. This latter provision is very necessary, as moisture favours the growth of the fungus. Another, and more commonly recognised yeast infection of the skin is :

BLASTOMYCOSIS, OR BLASTOMYCETIC DERMATITIS

This is a disease comparatively rare in this country, but apparently more common in America.

Definition.—A chronic inflammatory disease of the skin, due to a yeast fungus (*blastomyces*) and characterised by the development of moist red or purplish granulomatous lesions.

Etiology.—The disease is due to the blastomyces, which enters the skin through some abrasion or wound. It may be discovered in smears from the pustules of the lesions on staining with methylene blue. The organisms are seen as round or oval spore-like bodies with a double contour.

Signs and Symptoms.—The disease is characterised by the development on the skin of a number of reddish-brown papules, about the size of a millet seed, which, after a short time, break down in the centre, to form tiny pustules which discharge a thick muco-pus. The muco-pus dries on in the form of a crust. Underneath the crust the pustules break down further, and when the crust is removed the lesions appear as multiple, irregular, small papillomatous tumours, livid red or purplish in colour, capped in many instances by tiny punched-out ulcers with livid undermined edges, and purulent bases.

The commonest sites for the lesions are the face and the backs of the hands (Fig. 55).

The patches or clusters of lesions tend to spread peripherally by the formation of fresh papules or papulo-pustules, and when the disease has existed for some time it presents a very characteristic appearance, consisting of a central broken-down area, which may be covered by a crust or which may be undergoing cicatrization. Outside that is a zone of papillomatous tiny tumours, undergoing superficial ulceration, and outside that again a further crop of papillary cauliflower-like excrescences, the whole of a reddish-purple colour. There is little, if any, pain, but sometimes some itching and burning. Adjacent lymphatic glands are not enlarged, unless the secondary pus infection is severe, and in the local variety there is no systemic disturbance. The disease is very indolent, and after healing depressed whitish scars, not unlike those which follow lupus vulgaris, are left.

A blastomycetic infection of the nails has been described.

Diagnosis.—There is great risk of confusion with *tuberculosis cutis*, *siphilis*, and *sporotrichosis*.

In *tuberculosis cutis* (Lupus), ulceration occurs at a much later date, the lesions are more indolent, less extensive in their spread in a given time, and usually exhibit the characteristic "apple-jelly" nodules. But on the hands,

* *Archives of Dermatology and Syphilis*, March, 1922.

blastomycetic dermatitis may resemble *lupus verrucosus* so closely that a differential diagnosis can only be made after a careful microscopical examination of a specimen of pus ; or after cultural tests, bioscopic examination, tuberculin tests, or inoculation experiments.

From *syphilis* the disease is distinguished by the characteristic evolution of the lesions, by the miliary abscesses capping the papules, and by the cauliflower-like excrescences that surround the central ulcerated zone. Further, the Wassermann reaction is negative, and there are no evidences of syphilis elsewhere.

In *sporotrichosis* the lesions are subcutaneous, rupturing through the epidermis secondarily ; while in blastomycosis the lesions are epidermic from the first.

I have known blastomycosis to be mistaken for *epithelioma*, but this



FIG. 55.—Blastomycetic Dermatitis.

confusion should not occur. An epithelioma is much harder, has not the same appearances as blastomycosis, and in case of doubt the examination of a section will clear the matter up.

Prognosis.—If the disease is local the prognosis is good. If systemic infection occurs, death may ensue in a few weeks or months.

Treatment.—Locally, dressing with a 1-2 per cent. aqueous solution of iodine, or with 1-4000 perchloride of mercury, will keep the parts clean and help to arrest the spread of the disease. The application of X-rays has been recommended. Internally, large doses of potassium or sodium iodide should be administered, and continued for some weeks after the lesions have disappeared.

Pityriasis alba : Seborrhœa sicca

The “ *bottle bacillus* ” of Unna has been the subject of much controversy ever since it was first described. Its precise etiological rôle has not yet been agreed upon, nor is its exact place in the classification of micro-organisms yet determined. It is, however, now agreed that

it is identical with the *spores of Malassez*, and there is a growing body of opinion that it is a yeast. It is an oval or melon-shaped organism, drawn at one end into a bud or projection which looks somewhat like the neck of a flask. It is usually met with singly, in the microscopic field, but sometimes it is arranged in short chains, and it has been seen to bud. It stains readily, and does not decolorise with Gram's method.

It is invariably present, in large numbers, in cases of pityriasis capitis, and this constant association is believed to be an etiological one.

Signs and Symptoms.—Pityriasis capitis is an extremely common disease in this country. It usually begins in childhood with the appearance of one or more tiny circular patches of greyish-white, friable scales on the scalp, arranged round the hair follicles. The condition is commonly spoken of as dandruff. These scaly patches are extremely rebellious to treatment, and spread peripherally until, through the confluence of adjacent areas, the whole of the hairy scalp may be covered. The condition may, on a superficial glance, suggest ringworm, but there is no breaking of the hair, and on microscopical examination no ringworm fungus is found. The scales consist almost entirely of altered epidermic cells derived from the horny layer of the scalp, and the cells lining the neck of the sebaceous follicles. At puberty, when the sebaceous glands wake into activity, their secretion affords a suitable nidus for the growth of the *microbacillus* of Sabouraud, and the *morococcus*, or *mulberry coccus* of Unna, which is identical with the "*grey coccus*" of Sabouraud and closely allied to the *staphylococcus epidermidis albus*. The clinical picture is changed by the activity of these organisms and by the sebaceous secretion, and instead of white, dry, powdery scurf, the dandruff becomes greasy and of a dirty yellowish colour.

Sometimes the mischief spreads to forehead, face, neck, trunk, and limbs, and scaly rings or patches set on a reddened base develop on the glabrous skin. These are called "*seborrhœides*," and will be dealt with later.

The condition on the scalp is sometimes called *seborrhœa sicca*, but this is a misnomer, as the part played by sebum is a secondary one, the scales being in childhood entirely epidermic, and in adult life largely epidermic with a small addition of dried sebum.

Pityriasis alba is usually accompanied by considerable itching of the scalp, is probably contagious, and in many cases leads to gradual progressive fall of the hair, especially over the vertex. The "*high-brow*" type of baldness, in which the hair begins to disappear early from the fronto-temporal regions, the baldness spreading backwards progressively, is usually traceable to long-persisting pityriasis alba. But some people may be affected for many years without any appreciable

loss of hair, so that there is probably some personal factor at work, possibly of an hereditary nature, in those sufferers who become bald.

Treatment.—The disease is extremely intractable to treatment, and success can only be achieved by thoroughness and patience. Treatment should be continued for some weeks after all symptoms have disappeared, and renewed intermittently if the slightest sign of scurf should declare itself again. The scalp should be washed at least once a week with one or other of the following soap lotions :—

R. Saponis Mollis, \bar{z} ii.	R. Saponis Mollis, \bar{z} ii.
Tinct. Lavandulæ Co., \bar{z} i.	or Tinct. Quillaïæ, \bar{z} i.
Spiritus Vini Rect., \bar{z} i.	Acetoni, \bar{z} ii.
M.	Aq. Rosæ, \bar{z} i.
	M.

To these soap lotions may be added various medicaments, *e.g.* Hydrarg. Perchloride, gr. $\frac{1}{4}$ per oz. ; or Thymol, grs. iii. per oz. ; or Sulph. precip., grs. x. per oz.

The best method of using the spirit shampoo lotions is to wet the scalp thoroughly with warm water, and then pour one ounce of the lotion upon it, and massage it thoroughly in, working it into a lather, if need be by the addition of more water. When a good lather has been obtained, it is advisable to let it soak into the scalp for a moment or two, and then it should be rinsed out thoroughly.

But washing the head alone will not cure the disease. Other means have to be used as well. Ointments, although objectionable for many reasons, are our most effective agents, *e.g.* :—

R. Liquor Carbonis Detergens, min. xv.	R. Sulph. Precip., grs. xv.
Ung. Hydrarg. Nit. Dil., \bar{z} i.	or Acidi Salicyl., grs. x.
Acidi Salicylici, grs. xv.	Paraffini Mollis, ad \bar{z} i.
Paraffini Mollis, ad \bar{z} i.	M.
M.	

Sig. To be rubbed in every night. Sig. To be rubbed in every night.

In obstinate cases stronger remedies may be required, *e.g.*—

R. Ung. Picis Liquid., \bar{z} i.	R. Ol. Cadini, min. x.
Ung. Hyd. Nit. Dil., \bar{z} i.	Resorcini, grs. xx.
Ung. Acidi Salicyl., \bar{z} ii.	or Sulph. Precip., grs. xx.
Paraffini Mollis, \bar{z} ss.	Acidi Salicyl., grs. x.
M.	Paraffini Mollis, \bar{z} i.
	M.

Sig. To be rubbed in every night. Sig. To be rubbed in every night.

It will be readily understood that a patient engaged in business cannot pursue his usual avocations with his scalp greasy, and redolent

of ointments. Therefore it is advisable that at first he should wash the head every morning with some soap spirit. After a few days it will probably be found possible for him to discontinue the nightly inunction, so long as he attends to it carefully at the week-ends. Later, when the disease is under control, one may abandon the ointment treatment, and use lotions of various kinds, which will complete the cure. Brocq's lotion is an excellent one for the purpose—

R. Sulphuris Precip., grs. xxx.
 Spirit. Camphoræ, ℥i.
 Glycerini, min. xxiv.
 Aq. Destillatæ, ad ℥i.
 M.

Sig. Shake the bottle, and sprinkle over the scalp before brushing.

Or

R. Acidi Salicyl., grs. xxiv.	R Resorcin, grs. xii.
Hydrarg. Perchloridi, grs. i.	Liq. Carbonis Detergens, min. xxx.
Resorcin, grs. xii.	or Olei Ricini, min. xxx.
Spirit. Vini Rect., ℥ii.	Aq. Coloniensis, ad ℥iii.
Aq. Coloniensis, ad ℥iv.	M.
M.	Sig. To be rubbed into the scalp
Sig. To be rubbed into the scalp	every night.*
every night.*	

It will be found of advantage to alter the treatment from time to time, as the condition is extremely rebellious, and would seem to acquire special powers of resistance to one form of remedy if too long continued.

* N.B.—When using Resorcin, either in an ointment or a lotion, care must be taken that the scalp is free from soap or other alkali, lest the hair be discoloured. For washing the scalp while using Resorcin a lotion containing Quillaia is best (see Appendix).

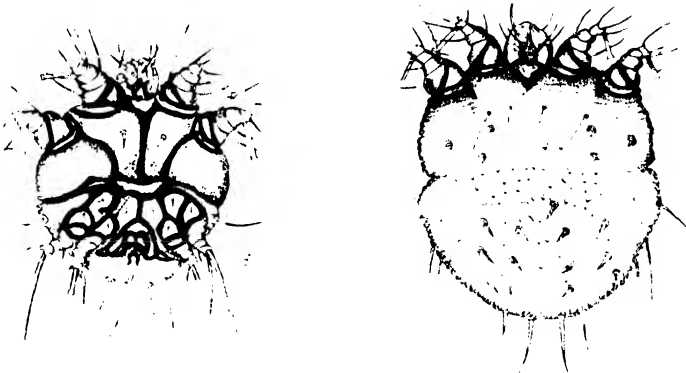
CHAPTER VII

DISEASES DUE TO ANIMAL PARASITES

SCABIES, OR THE ITCH

Definition.—Scabies is an intensely itchy disease of the skin due to the *Acarus* or *Sarcoptes Scabiei*.

Parasitology. The adult pregnant female acarus plays the chief part in the production of the disease. The male, which is smaller



Male : ventral aspect.

Female : dorsal aspect.

FIGS. 56 AND 57.—*Acarus Scabiei*.

than the female, lives on the surface of the skin, and dies after mating. The female, after fecundation, buries herself in a characteristic burrow which she tunnels out in the stratum corneum. Oval in shape, she measures about $\frac{1}{3}$ mm. in length and $\frac{1}{4}$ mm. in breadth, and is large enough to be seen by the naked eye (Figs. 56 and 57). The full-grown female has four pairs of legs : the two anterior pairs terminate in "suckers," the posterior pairs in long filamentous processes. In the male the first, second, and fourth pairs of legs have suckers, the third pair end in filamentous processes. The males are rarely seen because they wander at large, until their early death, on the surface ; and as they do not burrow there is no special indication as to where to find them.

The female lays from 15–20 eggs in her burrow, and then dies. The eggs hatch out in five or six days, and the tiny larvæ, which have only six legs, bore their way through the thin roof of the burrow, pass through a nymphal stage and become adults with eight legs. Impregnation soon follows, and the young females make burrows of their own in which to lay their eggs in turn. The burrows vary in length from 1 mm. to 20 mm., and are just broad enough and high enough to accommodate the body of the parasite, which may be found at that end of the burrow marked by a small pearly vesicle (Fig. 58). Behind the acarus along the burrow lie a number of blackish granules—the fæces of the parasite—and transversely placed ova in different stages of development. One may also find empty “shells” from which the larvæ have escaped. The roof of the burrow is unbroken over the adult female acarus, and over those ova that have not yet matured:

but over the empty “shells” it is perforated by tiny apertures through which the larvæ have escaped.

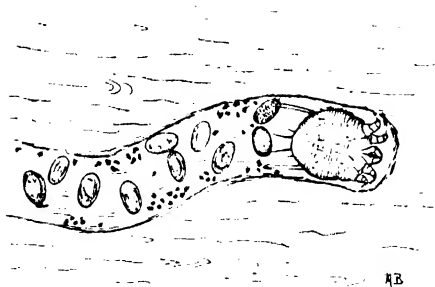


FIG. 58.—Schematic picture of female acarus in burrow.

The extraction of the female acarus for microscopical examination is not difficult. One should insert a fine needle into the opposite end of the burrow to that at which the pearly vesicle is situated, and gently tear through the roof, a small portion at a time, carefully

“combing” the walls of the burrow with the side of the needle. When the pearly vesicle has been ruptured, gently scratch its inner aspect, on both sides, with the point of the needle, and with a little care one will be able to pick up a tiny, white, almost invisible granule, which a microscopical examination will show to be the female acarus.

Method of Infection.—A healthy person acquires scabies by the transmission from an infected person or object, such as bedding, of one or more pregnant female parasites. There is reason to believe that the acarus rests by day, and that, consequently, transmission usually occurs at night, either from an infected bed-fellow or from infected bed-clothes. So frequently is scabies communicated in the course of illicit sexual congress, that some have classified it with the venereal diseases. This is, however, carrying the matter too far.

In the recent war there is little doubt that blankets used indiscriminately without adequate disinfection were a frequent means for disseminating the disease among the troops. It is possible also that

some of the infections among the soldiers were latrine infections—the latrine having been used immediately before by a scabietic person.

It is doubtful if the mere act of shaking hands with a sufferer, or using a book or other article recently handled by one, will transmit the disease.

Before the war the disease was largely confined to the poor, or those with scant opportunities of cultivating personal cleanliness. Nowadays, however, scabies is met with in all ranks of society. It is met with at all ages, but most frequently in childhood or adolescence. It affects both sexes—males most often, and city dwellers more frequently than country folk.

Signs and Symptoms.—Violent itching, worst at night, is the chief symptom; the characteristic burrow of the *acarus* is the chief sign. The severe pruritus is definitely nocturnal, and sufferers are kept awake by it. The nocturnal activity of the parasite—on which the exacerbation of the itching depends—is believed to be due to the extra warmth of bed; but there is evidence to prove that sufferers may sleep in bed in the daytime, without the itching increasing, while at night it becomes intolerable. It is more than likely that the increase of itching at night is due to the fact that the parasite is definitely nocturnal in its habits.

Generally speaking, the more the burrows the greater the itching. But a personal susceptibility comes into play. A few burrows on the hands or arms will awake in one patient an intense and generalised pruritus, while another patient with innumerable burrows will state that he hardly itches at all. In cases of pustular scabies, in which each burrow has been converted into a lacuna of pus, itching may be almost entirely absent.

The characteristic burrow of the *acarus* is visible as a narrow, sinuous, punctate greyish-black line from 1–20 mm. in length. Among cleanly folk who wash frequently, and whose occupation is a clean one, the burrows are often difficult to detect. Among the poor the burrows are usually much more easily discovered. One end, that at which the parasite has entered, is sometimes visible as a black point, or as an excoriation due to scratching. The other end, more deeply situated and terminating blindly, sometimes shows as a pearly vesicle. The burrows have special sites of election, and a knowledge of these situations is invaluable in making a diagnosis (Fig. 59). They are the skin on the opposed surfaces of the fingers and toes, more particularly near the web, where the skin is delicate, the ulnar edge of the hand, the base of the thumb, the front of the wrists, the inner aspect of the elbow, more particularly near the internal condyle of the humerus, the anterior axillary fold, the glans penis, and the sheath of the penis; the nipples and areolæ in women. Burrows are also common on the buttocks,

in the skin over the ischial tuberosities and along the edge of the internatal cleft, and outer sides of the thighs, but as these are easily accessible they are soon torn and disguised by scratching. Lesions also occur between the toes. In young children the soles frequently, and the palms in lesser degree, may be the sites of scabietic burrows which rapidly become pustular.

The face and scalp are never affected, and the neck almost always escapes. The back of the thorax is also usually exempt; but with

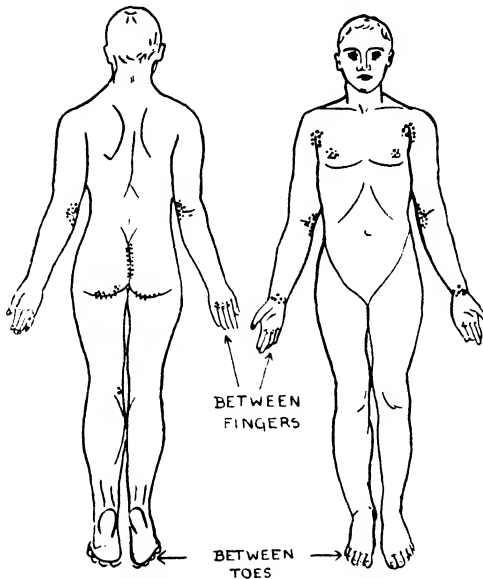


FIG. 59.—Distribution of Scabies. The dotted areas indicate the commoner sites of election.

these exceptions the burrows may be found anywhere on the skin—but more particularly in the areas of predilection (Figs. 60, 61).

An uncomplicated case does not offer much difficulty in diagnosis. But the uncomplicated case is the exception, for the act of scratching, and the secondary infections which follow it, produce lesions that tend to obscure the true character of the disease. The secondary lesions vary from numerous scattered torn and inflamed papules through all degrees to pustules, boils, impetiginous and ecthymatous sores, and even abscesses with lymphangitis and septic adenitis. These may obscure the clinical picture, but there is usually something definite and characteristic about the grouping of these lesions which should awake suspicion as to the true nature of the underlying condition. Not infrequently, in persons predisposed to eczema, definite eczematization of the skin may occur, and add a further complication; and in all

cases of moist eczema affecting the nipples and areolæ in women, one should be on the look-out for scabies.



Note distribution of lesions.



Sc.
FIG. 60

Complications. Local complications have already been dealt with. Systemic complications may occur, *e.g.* slight and usually transient albuminuria, which may, occasionally, give rise to œdema

The loss of sleep consequent upon the intense itching may lower the vitality of the aged, the feeble, or the very young, and induce a kind of cachexia. At one time it was believed that the cure of scabies might bring on an attack of some serious systemic disease, such as one of the infectious fevers. This belief was based on an incorrect deduction from observed facts. Scabies may disappear spontaneously if a severe general illness supervenes; but when the general malady has run its course, the itch will return unless the *acarus* has been destroyed in the meantime. The febrile attack only inhibits its activity for a time.

Diagnosis.—The uncomplicated case presents little difficulty. The discovery of a typical burrow, and, better still, the finding in it of the *acarus* or its eggs, is an absolutely pathognomonic sign. The burrows should be looked for in all itching dermatoses, at the sites of election. It is a wise plan to regard every form of pruriginous eruption as a potential scabies. In every doubtful case of itching eruption in a male examine the skin of the penis and the glans penis with care. A burrow there clinches the diagnosis at once. The appearance of a burrow is characteristic, but some burrows are disguised. A suspicious-looking lesion may be made to reveal itself as a burrow if it is smeared lightly with black ink. Some of the ink finds its way through the apertures in the roof of the burrow through which the larvæ have escaped, and remains to indicate the course of the burrow after any ink adhering to the surface of the skin has been wiped off.

One should be on the alert to detect scabies in all cases of polymorphic itching eruptions affecting especially the hands, wrists, penis in man and breasts in women, but sparing the face. And whenever two members of one family complain simultaneously of an itching eruption, one should look for scabies. The nocturnal itching is a very characteristic symptom. Sometimes a patient volunteers the statement that the itching is worst at night, but if he does not do so, one should not ask a leading question, but ask simply whether the itching varies, and if so at what period of the day it is most severe.

Differential diagnosis.—1. Many a case of scabies has been diagnosed as *eczema* because eczematous symptoms preponderated, and masked the scabies. But the distribution of the lesions, the likelihood that more than one case occurs in the same household, and the nocturnal itching, should direct one's suspicions to the underlying cause which the discovery of a burrow will confirm.

2. *Syphilis*.—For differential diagnosis, see p. 93.

3. *Pediculosis corporis*.—In this condition the bulk of the lesions are on the back—a region relatively free from the lesions of scabies—and there are no lesions on the hands or penis, nor burrows anywhere; but pediculi may be seen with the naked eye along the seams of the underclothing.

4. *Pediculosis pubis*.—This may affect either sex, but the itching is confined almost entirely to the hairy regions of the genital organs, and does not affect the glans penis. There is no special nocturnal periodicity about the itching, and the ova of the parasites are easily recognised attached to the pubic hairs, among which the pediculus itself may be seen stationary or crawling on the skin.

5. *Urticaria papulosa* or *lichen urticatus* in young children may be confused with scabies on account of its intensely pruriginous character, and the fact that the itching is often worse at night. But the lesions are different in character and distribution, being red papules surrounded by a definite rosy blush, situated for the most part on the outer aspect of the limbs. Further, no burrows are discoverable, and the disease is not contagious.

Treatment.—The aim of treatment is the destruction of all the acari and all their eggs infesting the skin, and the complete disinfection of all articles of clothing or bed-clothing that may have become contaminated. At the same time one must pay due attention to all the secondary lesions that may complicate scabies, for these lesions are frequently very intractable, and lengthen materially the time required for a cure. Before the war most cases of scabies were cured in a week. During the war the cases were so complicated by boils, impetigo, and ecchymatous sores that the average sojourn of a man with scabies in a military hospital was over a month.

Many remedies will cure scabies, but none has dispossessed sulphur from pride of place. If properly used, with careful attention to details, sulphur will cure all cases of scabies, but one must be careful not to use it in too strong proportions or for too long a period. The best results are obtained if the patient can remain in bed during the course of the treatment; but this is not always possible, nor is it necessary.

The line of treatment I usually follow is this:—

1. Explain carefully to the patient if an adult, or to his father or mother if a child, what one is aiming at, viz. the destruction of a living parasite and its eggs.

2. Let the patient anoint himself thoroughly from the neck to the soles with soft soap, which should be rubbed with special vigour into all the areas specially affected.

3. He should then lie down in a large bath of warm water, which covers him completely except for the face and head. This bath should contain some parasiticide, e.g. cyllin in the proportion of ̄i. to three gallons of water, or ̄i. of Potassa Sulphurata to two gallons, or a sulphagua bath charge in a bath of 30 gallons.

4. The patient should remain in the bath for half an hour, and while lying in it he may, with advantage, try to break open the burrows by the free use of a strong nail brush.

5. After the bath the patient should dry himself with a soft towel, and proceed to anoint himself thoroughly with the following ointment :—

R Ung. Sulphuris.
 Ung. Zinci Oxidi, āā p.e.
 M.

In the application of the ointment special attention should be paid to all the regions specially liable to attack by the acarus, and a thin layer of the salve should be left upon the skin.

6. If the patient can afford the time for treatment in bed, he should then don thin cotton or linen night-clothes. If the treatment is for an ambulatory patient, he should put on thin cotton or linen under-clothing, which he should continue to wear till the treatment is completed.

7. The treatment should be repeated twice in the first 24 hours, and once daily for three more days.

8. Before the second day's treatment one should examine the patient carefully, and lay open with a sterilised needle any burrows that have resisted the nail-brush.

9. On the fifth day a hot bath should be taken, without any medication, and without any inunction, and the underclothing and bed-clothing should be completely changed, and all infected clothing should be disinfected (*vide infra*).

10. After the sulphur treatment is completed it is often advisable to prescribe a soothing ointment such as

R Acid. Carbol. Liq., min. ii.	R Liquor Carbonis Detergens, min. v.
Ung. Zinci Ox., ʒi.	or Glycerini Amyli.
M.	Ung. Aq. Rosæ, āā ʒss.
	M.

It cannot be insisted upon too strongly that excessive treatment with sulphur will set up an extremely irritable dermatitis which may be regarded by the patient, and sometimes also by his doctor, as an indication that the acarus has not been eradicated. If this error is made, and still stronger sulphur treatment is indulged in, the condition is only aggravated. Some patients are extremely susceptible to the irritating action of sulphur. An excellent remedy for sulphur dermatitis is an oily calamine lotion as follows :—

R Calaminæ Preparatæ, grs. xxiv.
 Pulv. Zinci Oxidi, grs. xii.
 Ol. Olivarum, ʒss.
 Aq. Calcis, ad ʒi.
 M.

Sig. To be smeared on night and morning.

For the uncomplicated case of scabies the above treatment ought always to suffice. Success depends on thoroughness, and on meticulous attention to detail, and every case should be kept under observation for 10-12 days after treatment to detect any recurrence at once.

As an alternative to sulphur ointment a solution of Potassa Sulphurata, $\text{ʒi.}-\text{ʒii.}$ to a pint of water, was frequently used during the war. It was painted on freely, and rubbed with a stiff brush into the areas specially affected before the patient entered his bath. In many cases it acts well; but if used injudiciously or if the patient has a delicate skin, it may set up a violent desquamative dermatitis.

Helmerich's pomade is a pleasant sulphur preparation which may be used instead of the sulphur and zinc ointment. It consists of sublimed sulphur 10 parts, distilled water 5, almond oil 5, potassium carbonate 5, and lard 35 parts, all by weight.

Balsam of Peru has long had a vogue in the treatment of scabies. It may be used as a paint dissolved in equal parts of 75 per cent. alcohol, or mixed with an equal quantity of glycerine. When using balsam of Peru it is important to watch for toxic symptoms, examining the urine frequently for albumen.

Petrol and chlorine vapour were both suggested during the war, but both are powerful irritants, and much less safe and efficacious than sulphur.

β -Naphthol is good; but in strong percentages it is apt to give rise to a sensation of intense burning. It has, however, this virtue, that it will sometimes cure the eczematous condition which accompanies scabies at the same time as it destroys the acarus. It may be used with or without sulphur. I prefer this formula, a modification of Kaposi's β -Naphthol ointment:—

R β -Naphthol, grs. xx.
Saponis Viridis, ʒiss.
Cretæ Albæ, ʒi.
Paraffini Mollis, ad ʒi.
M.

Sig. To be applied on three successive days.

In the treatment of children suffering from scabies weak sulphur, ointments are best, and in pustular scabies it is well to open all the pustules before the first bath.

Mitigal, an oily preparation containing some derivative of sulphur, has given me good results. It is odourless and non-irritating and seems to destroy the acarus rapidly.

"One night cures" are apt to give the patient a false sense of security. Unless applied with extraordinary thoroughness they do

not succeed in ridding the patient of all the parasites at one application. Marcussen compounded an ointment which is procurable under the name of "Kathiolan." It is the best of the rapid remedies. It is used as follows :—After a hot bath lasting for 10–20 minutes, with copious lathering with soap, the patient dries himself and rubs in "Kathiolan." He then dons pyjamas and bed-socks and goes to bed, remaining there for 24 hours. At the end of that time he takes a warm bath, and puts on fresh linen. The one application often effects a cure. Of course all bed-clothing, etc., must be disinfected in the usual way to prevent re-infection.

The complications of scabies should be dealt with according to their character. Ecthymatous sores or impetiginous lesions will often dry up quickly if treated with 1 per cent. solution of silver nitrate in spirits of nitrous ether. Until these sores are dried up it is usually best to omit the bath treatment.

Disinfection of Clothing.—All bed-clothes and underclothing used by a patient during an attack of scabies must be disinfected. Cotton or linen articles are best disinfected by boiling. Woollens and flannels may be disinfected by soaking for twenty-four hours in a strong solution of cyllin, and afterwards washing in cold water. Kid gloves may be treated with a dusting powder of flowers of sulphur. Outer garments—which are, however, less likely to spread contagion than garments worn next the skin—may be disinfected by dry heat. This will be done in any large town by the Public Health Department. If such facilities are not available, they may be hung in the open air for a few days after spraying them with formalin or burning a formalin candle beneath them.

In addition to scabies of the ordinary type one sometimes meets with itch transmitted from animals to man, *e.g. equine scabies, scabies of cats and dogs, scabies of camels*, etc. As a rule the symptoms are much the same as in the ordinary type, though burrows are sometimes very difficult to find. The infection is generally mild and easily cured with sulphur ointment. *Norwegian scabies*, described by Danielssen and Boeck as found among lepers, is due to the ordinary *acarus scabiei*. It is nothing more than a severe scabies with secondary pustular and crusted lesions, and many of the crusts have been found to contain dead acari and their ova in large quantities.

Pediculosis

Like the *acarus scabiei*, the pediculus or louse was the cause of much discomfort to our soldiers during the war. During and since that conflict a great deal of study has been devoted to the louse, the results of which have been admirably presented by Dr. James Waterston,

to whose pamphlet * I am indebted for many of the following details as to the life and habits of the pediculi.

Three forms of pediculi affect man : (1) *Pediculus humanus capitis*, (2) *Pediculus humanus corporis*, and (3) *Phthirius* or *Pediculus pubis*.

Pediculi.

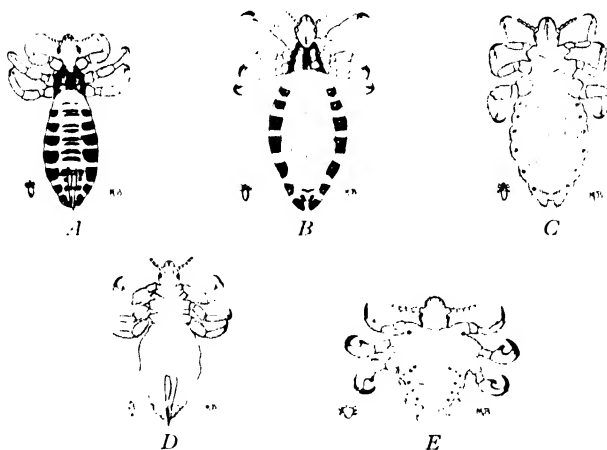


FIG. 62.—A, *Pediculus capitis* (M.); B, *Pediculus capitis* (F.); C, *Pediculus vestimentorum* (F.); D, *Pediculus vestimentorum* (M.); E, *Pediculus pubis*.

Lice from other mammals may find their way on to the human skin, but, so far as is known, the hog-louse is the only one of these adventurers which can live there.

"Lice are small, entirely wingless parasitic insects, whose only food is mammalian blood." They do not breed in or from dirt, and the eggs must be laid in close proximity to the skin of the host to secure a suitable temperature for their further development.

Pediculus capitis and *Pediculus corporis* are not so widely separated as was once believed. The head-louse is smaller, more horny, of darker colour, and has thicker antennæ and more deeply cut abdominal segments, and is probably more primitive than the body louse, which has developed somewhat since its host took to wearing clothes. Head-lice and body-lice breed freely together, and their hybrids are fertile for several generations.

The life-history of both varieties is almost identical. The female lays eggs industriously—8 to 12 a day till a total of 200–300 is reached. The eggs are deposited on cloth or hair, a tiny drop of a quickly drying cement exuding immediately before each egg, and anchoring it by a chitinous sheath to hair or clothing (Fig. 63). Both egg-

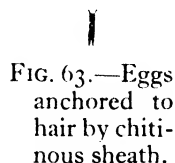


FIG. 63.—Eggs anchored to hair by chitinous sheath.

* "The Louse as a Menace to Man : Its Life-History and Methods for its Destruction." By James Waterston, B.D., D.Sc. British Museum (Natural History), Economic Series No. 2. London, 1921.

shell and cement are of a chitinous nature, and are difficult to dissolve. The period required for the hatching of the eggs varies with the temperature—a week being the average. The young louse begins to feed on its host's blood as soon as it emerges. In 17 days it is mature, having moulted three times before this stage is reached, and its life after it reaches maturity is from 3–5 weeks. Mating occurs early, and a female may lay fertile eggs within 24 hours of the last moult. Body-lice tend to leave a host whose temperature rises above or falls below normal. They are transferred from one person to another directly or by infected clothing, or casually by dropping from clothing or being blown by the wind.

Head-lice are commoner on women and children; body- and crab-lice on men, but one person may be infested by all three varieties. In this country lice are more common in winter than summer. The crab-louse (*Phthirus pubis*) is somewhat tortoise-shaped and has a special predilection for areas of the body where the hair is curved or curly, e.g. the pubic region, the axillæ, the eyebrows, and even the eyelashes. The straight hair of the head is not suitable for its retaining its hold. The adult lice anchor themselves to two hairs. The female lays up to 26 eggs, which she attaches to the bases of single hairs. The life of a crab-louse is about seven weeks. It may remain almost stationary from the time it is hatched, and if it moves it moves sideways. Adult crab-lice are disseminated by actual contact with an infected person—often in the act of intercourse.

Lice are potential sources of great danger to man, as they convey typhus, relapsing, and trench fever. Typhus and relapsing fever are hereditary in lice.

Pediculosis Capitis

Parasite.—*Pediculus humanus capitis*.—The female measures $2\frac{1}{2}$ mm. in length by 1 mm. in breadth; the male is somewhat smaller. The body is ashen grey in colour. The lozenge-shaped head is provided with a pair of antennæ situated in front of the eyes.

They attack the young particularly, with a preference for girls. Accidental infections may occur in any grade of society, but pediculosis capitis is especially a disease of the poor and neglected. There would seem to be a personal idiosyncrasy towards infection with head-lice. Anæmic phthisical girls are very liable to the disease. The idea held by some hospital patients that pediculi on the head of a child indicate a robust constitution is a delusion.

Symptoms.—The lice bite the scalp in order to suck blood: the bite sets up itching, which leads to scratching by the patient, and scratching induces secondary pus inoculation. In a mildly infested child, not unduly neglected, the only lesions visible may be a few superficial excoriations on the scalp, particularly in the region of the sub-occipital furrow, and living parasites or ova attached to the hairs may be very hard to find. But a neglected child with a severe infestation presents a very different picture. First of all, a peculiar penetrating odour emanates from such a child's scalp, and may be recognised by the experienced nurse or physician at a distance of some yards. Then on examination the hair is found to be matted together with pus, and

powdered over with dirty-grey empty but adherent egg-cases. On separating the hairs with a director living parasites may be seen crawling among them, and on penetrating through the fetid thicket of tangled encrusted hair to the scalp, it is found to be covered with deposits of blood-stained, semi-dried pus, under which the epidermis is undergoing maceration. The adjacent lymphatic glands are enlarged, and in most cases there are impetiginous sores on the face, and sometimes pustules round the nails. Abscesses may form on the scalp, and septic absorption may lead to serious illness.

The whole scalp may be affected; but the occipital and sub-occipital regions are the areas of election, and all patients, whether children or adults, who complain of itching in these regions should be examined carefully for *pediculi capitis* and their ova. Originally the ova are attached to the hairs about one-eighth inch from the scalp, but as the hair grows the ova are carried outwards with it.

Treatment.—The best treatment is prevention. The sheltered child usually escapes this infection, and if an accidental infection should occur the parasites are usually discovered early and removed by combing with a fine dust comb before they have “dug themselves in.” But combing does not readily remove the ova unless their chitinous attachment to the hair is dissolved. This may be effected by moistening the comb with warm vinegar between each passage through the hair.

A boy suffering from *pediculi capitis* may be cured rapidly if his hair is cut short with clippers and his scalp is well smeared with this ointment :—

R. Hyd. Ammon., grs. v.
Sulph. Precip., grs. xx.
Acid. Salicylici, grs. xv.
Paraffini Mollis, ʒi.

M.

Or his scalp may be thoroughly saturated with ordinary commercial paraffin oil, either pure or diluted with $\frac{1}{3}$ olive oil, and washed next day with spirit soap lotion.

In the case of a girl it is rarely necessary to cut the hair in order to effect a cure. All the parasites may be killed, the ova devitalised, and the suppuration arrested by the following method, introduced by Arthur Whitfield, which I have often used in hospital practice and never known to fail. Lay the child on her back on a table, with her head projecting over its edge, and her hair hanging down over a bucket set on the floor. Pour several pints of 1–40 carbolic lotion over the head, and let it drain through the hair into the bucket. The lethal effect on the parasite is rapid. When the hair is thoroughly saturated, squeeze any superfluous lotion out lightly, and tie up the whole head in a soft towel or old piece of flannel for an hour in the case of a young

child, or three or four hours in the case of an adult. Then wash the head with spirit soap lotion, removing as many of the softened impetiginous crusts as are loose, and dress any raw places with white precipitate ointment, grs. xx.—ʒi. The nits, which have been devitalised, are removed by combing with a dust-comb moistened in vinegar.

For children under three years this method is not altogether suitable because of the dangers of absorption of carbolic acid. They may be treated in a similar way with a 1-4,000 perchloride of mercury solution.

PLICA POLONICA.—A condition in which the long hair in women is matted into thick masses or glued together to form an appendage like a cow's tail, is due to severe pediculosis capitis and neglect.

Pediculosis Corporis. Phthiriasis. Vagabond's Disease. Pediculosis Vestimentorum

Parasite (*pediculus humanus corporis vel vestimentorum*).—It resembles *P. capitis* closely, but is longer and broader and is of a dirty yellowish-grey colour. The female is very fertile and lays from 60-80 eggs, which hatch out in from 2-3 weeks. Pediculosis capitis is a disease of childhood; pediculosis corporis is, except in time of war, essentially a disease of the aged, neglected, and debilitated adult.

The parasites infest the underclothing in immediate contact with the skin, sucking the blood and finding protection in the folds of the clothing, especially underneath the overlapping edges of the seams.

Symptoms.—The bite of the parasite gives rise to intense itching, usually worse in the evening, and provokes the appearance of an urticarial wheal. The itching causes the patient to scratch, sometimes unconsciously, but usually with vigour. The scratching produces lesions of two main types—small excoriations, as though a piece of skin had been dug out with the finger-nails, and long linear tears in the skin, the more recent of which may be seen to ooze blood-stained serum, while the older are covered with reddish-brown crusts. These lesions are found on special regions of the body, e.g. the upper part of the back, the anterior abdominal wall, the buttocks, and the outer and anterior aspect of the thighs. The face, hands, and feet escape, and the fore-arms are relatively immune.

Secondary pus infection of the scratch marks may produce ecthymatous or impetiginous sores, or even boils. Enlargement of adjacent lymphatic glands does not occur so frequently as is the case in *P. capitis*. A person who has suffered for a long period from pediculosis corporis usually develops considerable chocolate-brown pigmentation of the skin in the areas particularly affected. This pigmentation may spread to parts of the body not usually affected by lice, and Dubreuilh has suggested that this may be due to some venom inserted by the bites which is capable of producing pigment.

Diagnosis.—Itching in the elderly, worst at night, and confined to the covered parts of the body, the hands being unaffected, should always suggest the possibility of *P. corporis*. On examination, the typical distribution of the scratch marks, especially on the shoulders and abdomen, should lead one to look for the pediculus along the seams of the underclothing. They are rarely seen upon the skin itself. The diagnosis is confirmed by the detection of the parasite.

Differential Diagnosis.—1. From *Scabies*. The distribution of the lesions is altogether different (see p. 171).

2. *Senile pruritus*. Always eliminate any possibility of the condition being due to pediculi before making a diagnosis of senile pruritus.

3. *Addison's Disease*. The pigmentation produced by pediculosis may suggest Addison's disease. The differential diagnosis is based on general symptoms, e.g. the anæmia, low-tension pulse, and debility associated with the latter.

Treatment.—(1) Disinfect the clothing, and (2) treat the patient. Soak all woollens in strong solutions of cyllin, wash with cold water and iron while still damp with hot irons, paying special attention to the seams. Cotton or linen underclothing should be boiled. Garments that cannot be boiled or soaked in antiseptics may be thoroughly sponged with petrol or benzine, or disinfected by exposure to dry heat (50° C.) for half an hour. Blankets and bedding may be disinfected with dry heat.

The patient may be given cyllin baths (5ss. in 20-30 gallons), and the scratches on the skin may be protected and healed by an ointment such as :

R. Glycerini Amyli.

Ung. Acidi Salicylici, aa p.e.

Pediculosis Pubis

Parasite (*Pediculus pubis*) peculiar to human beings. The parasite is somewhat tortoise-shaped, the transverse median diameter of the thorax being its broadest part. The female is about $1\frac{1}{2}$ mm. long, and about the same breadth. The colour is dirty grey. The head carries a pair of antennæ, and three pairs of legs are attached to the thorax. The anterior pair of legs are delicate, but the two hinder pairs are strong and end in a kind of movable hook, which forms a claw when opposed to a projection upon the leg. These claws enable the parasites to anchor themselves firmly to the pubic hairs.

Each female lays 12-18 eggs.

The habitat of the pediculus pubis is the hairy region of the pubes and the genitals, and as a rule it remains there ; but occasionally it is seized with the spirit of adventure and wanders further afield, among

the hair on the anterior abdominal wall, whence it may spread to the hair on the chest in men, and the axillary hairs in both sexes. I have seen it even among the hair on the eyebrows and eyelashes.

Sexual intercourse is probably the most frequent method by which the parasite is transmitted, but it may be picked up quite innocently from a water-closet seat.

Symptoms.—The bite of the insect is venomous, and the venom sets up a lively irritation, which varies in intensity with the susceptibility of the patient.

On examination of an infected person one may see through the thicket of the pubic hairs a number of excoriated papules, or the skin of the affected region may appear eczematous. On closer inspection greyish masses (the ova) may be seen attached to the pubic hairs, and anchored to the hairs close to the skin the causal parasite may be detected. Sufferers from pediculosis pubis often exhibit on the inner side of arms, thighs, and trunk pea-sized areas of bluish-grey pigmentation. They are due to a pigment introduced by the crab-louse as it feeds, and are known as *maculæ ceruleæ*.

Treatment.—The most rapid method of dealing with this infection is to shave all hair from the affected regions and burn it. After shaving the parts one may apply a 10 per cent. calomel ointment, or sulphur ointment or zinc ointment containing grs. x. of β -Naphthol in the ounce. Blue ointment, a popular remedy for the condition, should not be used, as it frequently sets up a dermatitis.

If the condition affects the eyelashes and eyebrows, apply an ointment of yellow oxide of mercury, $\frac{1}{2}$ per cent.

Pediculus pubis does not cling to clothing; but it is always wise to disinfect the underclothing of a sufferer.

PULEX IRRITANS—THE COMMON FLEA

Pulex irritans—a very common human parasite, which is no respecter of persons—is a wingless insect with highly developed saltatory powers. Infection is from person to person, or from the dust of ill-kept houses to their inhabitants. Young children are the chief sufferers.

A flea-bite is characterised by a central bright red hæmorrhagic point surrounded by a rose-coloured urticarial ring. The itching may be very intense, or almost imperceptible, varying with the sensitiveness of the victim. Flea-bites are usually met with in series of three—either grouped or in a line. Their commonest situations are the thighs, buttocks, abdomen, and legs. Flea-bites are never seen above the level of the lower jaw. When the urticarial blush round the bite fades, the central puncture may remain visible for some days.

Treatment.—The best treatment is prevention. People susceptible to flea-bites may, with advantage, carry some β -Naphthol in a small bag near their skin if they expect to be exposed to infection. One drachm of ichthyol rubbed up in $\bar{\text{iii}}$. of methylated ether and applied to the bites will give almost instant relief from the itching.

The medical student engaged in slum work deals efficiently with the flea by dropping a little chloroform on his clothing over the spot where he feels it is at work. This either kills it, or lulls it to sleep so that it may readily be caught.

The rat-flea transferring itself from its dead or dying plague-stricken host is the chief means whereby bubonic plague is spread to man.

THE BED-BUG—*CIMEX LECTULARIUS*

THE BED-BUG.—This insect lives normally in cracks in the woodwork of old wooden beds, in spaces behind wainscoting, beneath semi-detached wall paper, and in old dry collections of household rubbish. It is 4–6 mm. long and about 3 mm. broad, and has a greyish, flattened, rounded body. Bed-bugs have a peculiar characteristic odour, not easily forgotten.

It attacks exposed parts of the body, and always at night, directing its attention specially to the neck, the eyelids, the cheeks, the forearms, and the legs below the knees. Its bite produces a large intensely itching urticarial wheal—the cause of which may be difficult to determine unless one's mind is alive to the possibility of bed-bug infestation.

Treatment.—For the local lesion the ichthyol and ether paint recommended for flea-bites is of service. Local applications of weak solutions of ammonia or of 1–60 or 1–80 carbolic lotion will ease the itching and burning.

To prevent recurrences the bugs must be destroyed in their habitats. This is often difficult; but a free use of petroleum or petrol will often exterminate them.

THE HARVEST BUG : *LEPTUS AUTUMNALIS*

In late summer and early autumn holiday-makers in the fields often suffer from the attentions of the harvest bug. This is a bright-red six-legged insect of the spider class just visible to the naked eye, found on grass or bushes, which transfers itself to the skin of the passer-by which it bites, usually in the evening. The lesions are erythematous urticarial wheals, which may be somewhat persistent in children, especially on the legs.

The best treatment is prevention. Sulphur ointment smeared on the skin or a few drops of eucalyptus applied to the clothing before going out for an evening walk will usually protect one. The itching of the lesions may be arrested by weak ammonia solution or ichthyol ether paint (see p. 184).

A few of the rarer varieties of skin lesions due to animal parasites may be mentioned.

1. CREEPING ERUPTION : *LARVA MIGRANS* OR *DERMAMYIASIS LINEARIS*

This rare disease is characterised by the appearance of a linear lesion, slightly raised above the surface of the skin. The lesion travels—and may extend an inch or more in 24 hours—bending on itself in tortuous fashion or remaining more or less straight. The advancing end of the lesion is bright red, and somewhat urticarial; the older part of the lesion is pink and less raised. The lesion is due to various parasites, *e.g.* *Gastrophilus larva*, *Gnathostoma*, *Hypoderma bovis*, and others, burrowing beneath the skin. Treatment is ineffective. Excision has been tried, as well as the use of antiseptic ointments rubbed into the track of the parasite after it has been laid open.

2. “JIGGER” or CHIGOE DISEASE is due to a sand-flea—the *sarcopsylla*

or *pulex penetrans* found in India, the West Indies, Africa, Brazil, and elsewhere. The male rarely attacks man, but the pregnant female burrows beneath the skin, especially on the soles of the feet and between the toes, causing inflammation, ulceration, and abscesses. Treatment is the removal of the parasite with a blunt needle—if possible before she has laid her eggs, and with all care lest the abdomen be ruptured and the ova set free. Ulcers and abscesses produced by the parasite should be treated with antiseptics.

3. The larvæ of *ANKYLOSTOMA DUODENALE* or the HOOK-WORM boring their way inward through the skin of the feet may set up an itching vesicular or papular dermatitis which resembles eczema, known as “ground-itch,” “coolie-itch,” or *UNCINARIAL DERMATITIS*. Secondary pus infections are common. The larvæ find their way from the skin into the lymphatic vessels, and after a circuitous journey reach the duodenum. The lesions in the skin should be treated with antiseptic lotions and ointments.

4. *FILARIA SANGUINIS HOMINIS NOCTURNA* blocks with its ova the smaller lymph vessels of the skin and limbs, and recurring attacks of lymphangitis supervening, an enormous thickening and induration of the parts result—*ELEPHANTIASIS ARABUM*. *FILARIA LOA* or *FILARIA SUBCONJUNCTIVALIS* wanders about in the tissues underneath the skin, *e.g.* of the eyelid, producing transient red œdematous lesions known as Calabar swellings.

5. *OXYURIS VERMICULARIS*—the common thread worm, inhabiting the lower bowel especially of children, may escape on to the perineum and neighbourhood and set up an itching dermatitis round the anus, and in female infants a condition of erythematous vulvitis. Treatment is santonin internally or injections of common salt solution or infusion of quassia, and the local application of a 1-4,000 perchloride of mercury solution, alone or in calamine lotion.

CHAPTER VIII

SKIN DISEASES DUE TO FILTER-PASSING VIRUSES; AND SOME ALLIED CONDITIONS OF UNCERTAIN CAUSE

THE filter-passing virus is beginning to occupy a larger and larger place in the etiology of disease. It is believed that such different diseases as encephalitis lethargica and cancer may be due to such a virus. It is now definitely proved that such distinct diseases as herpes, molluscum contagiosum and the flat wart are due to filterable viruses.

Herpes zoster : Zona

Definition.—Herpes zoster is an acute disease, characterised by the eruption of grouped vesicular lesions along the course of a sensory nerve. The eruption is preceded, accompanied, or followed by disturbances of sensation.

Etiology.—There are two chief types of herpes zoster, viz. (1) *idiopathic*, which bears some relationship to the eruptive fevers, since it sometimes occurs in epidemics. Landouzy thought that it was an infectious disease affecting sensory nerves, and Montgomery * has suggested that it is due to a streptococcus which reaches the nerve ganglion through the skin and along the peripheral nerves.

J. R. Perdrau,† from a careful study of herpetic diseases, concludes that Herpes simplex, or Febrilis, is due to a living agent, an ultra-microscopic virus “which lives normally a semi-saprophytic existence on the mucous surfaces of most of us. It is mildly pathogenic to man, and is probably responsible for at least some cases of Zoster by a local invasion of the central nervous system.”

He also points out that some cases of herpes zoster contain in their vesicles a virus indistinguishable from that of varicella: and he believes that “a different strain of the virus of herpes, very pathogenic to man is the causative agent of encephalitis lethargica.”

These remarkable observations throw a light on the numerous cases that have been reported of recent years in which adults have

* *Arch. of Derm. and Syph.*, 1921, iv. 812.

† *British Journal of Dermatology and Syphilis*, Jan. 1927, p. 1.

developed herpes zoster shortly after being in contact with children suffering from varicella, or in which contact with herpes zoster has been followed by varicella. They should also warn us to be on the look-out for encephalitis lethargica among those who have been in contact with cases of herpes.

(2) *Symptomatic herpes* occurs in the course of other diseases, e.g. syphilis, diabetes, cancer, myelitis, locomotor ataxia, chronic arsenical poisoning, fractures or contusions involving a sensory nerve, etc. In general terms it may be said that any condition capable of provoking neuritis may be the proximal cause of an attack of herpes.

Pathology.—In every case of herpes zoster there is an inflammatory lesion of the posterior root-ganglion through which the affected sensory nerve passes. The researches of Head and Campbell showed that hæmorrhage into the posterior root ganglion, with destruction of the ganglion cells and fibres, is a common feature of acute cases. Following upon this they were able to trace degenerative changes along the posterior roots into the root fibres of the posterior columns of the cord, and similar changes along the course of the peripheral sensory nerves down to the fine twigs in the skin at the site of eruption. They found that the distribution of herpes zoster is segmental. That is to say, it does not follow accurately the distribution of any one sensory nerve, but affects the skin supplied by all the sensory fibres which pass through the diseased root ganglion.

The herpetic vesicles are produced by a special process which Unna has called “balloon degeneration.” The cells of the stratum mucosum alter in shape, lose their filaments of attachment to other cells, and become separated. Their protoplasm becomes opaque, fibrinous, and vacuolated, and the nuclei increase in number. The vesicles are filled with serum and cellular debris. The vessels of the papillæ are dilated.

Symptoms and Course.—Herpes zoster affects both sexes, and may occur at any age; but it is most common in adults, and sometimes in the old it is the precursor of death.

Its commonest site is on the side of the thorax, and in this region it presents the most typical appearances. Often there is some antecedent neuralgia, which may be very severe, and which has more than once been misinterpreted as *angina pectoris*, *biliary colic*, *pleurisy*, or other painful disease according to its situation. The neuralgia may precede the eruption by days or even weeks; or may appear only coincidentally with the skin lesions. Sometimes there is a slight febrile disturbance immediately before the eruption occurs.

The eruption appears in groups, at first as reddish plaques on which there soon appear crops of papules, which rapidly become vesicles (Fig. 64). At first tiny, these vesicles speedily increase in size and some of them become confluent, forming lagoons of serum (*Herpes zoster*

bullosus) on a reddish base, round whose irregular borders a few isolated vesicles may still be discerned. The serous fluid in the vesicles, at first clear and translucent, in a few days becomes opaque, and sometimes hæmorrhagic (*Herpes zoster hæmorrhagicus*). Absorption occurs, and the vesicles are converted into brown adherent crusts, which separate in a few weeks, leaving pigmented macules, or occasionally brownish



FIG. 64.—Herpes.

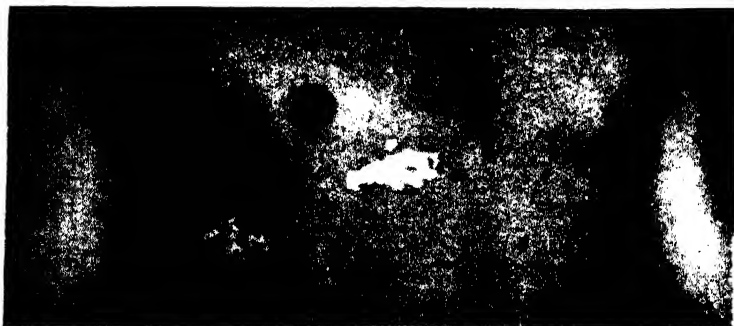
slightly depressed scars, which gradually become pale, and which may leave white spots on the skin for many months (Fig. 65).

The eruption is always grouped, and in intercostal herpes the grouping is very characteristic: one group being situated near the middle line behind, another somewhere about the midaxillary line, and a third in front, near the middle line. These groups correspond in situation to the perforating branches of the intercostal nerves. If the eruption is very copious this grouping may not be so obvious. The eruption does not cross the middle line either before or behind, though a few aberrant vesicles may trespass beyond it, on the course of some tiny cutaneous nerve twig. This limitation to one side of the body is only

characteristic of idiopathic herpes zoster ; but bilateral herpes may occur in locomotor ataxia. As a rule herpetic vesicles do not suppurate, but occasionally they do, in which case the surrounding zone of inflammation is more intense, the course of the malady is longer, and the lesions leave definite scars. In hæmorrhagic herpes the vesicles are filled with blood, and in gangrenous herpes there is a necrotic destruction of tissue at the base of each vesicle, with the ultimate formation of depressed deep scars. *Herpes zoster gangrenosus* runs a course of from 4-8 weeks.

Sometimes an attack is so mild that it does not pass beyond the papular stage, in which case it may escape notice (*Abortive herpes*).

In every case herpes is accompanied from the first by a painful enlargement of the nearest lymphatic glands. They are often missed because they are not looked for. In herpes involving the thorax or arms the axillary glands are enlarged ; in herpes of the lower abdominal



(Photo by Dr. Oran.)

FIG. 65.—White cicatrices left after Herpes' zoster.

wall or legs the inguinal glands are affected ; and in herpes in the area of distribution of the trigeminal nerve the preauricular lymph gland is involved.

The sensory disturbances vary. In children the accompanying neuralgia may be slight or altogether absent. Its intensity would seem to increase with age, and in old people the nerve pain, whether it precedes, accompanies, or follows the appearance of the eruption, may be intolerable, and require to be controlled by morphia. It may last for months after the eruption has disappeared. Accompanying or following the eruption there may be other disturbances of sensation, e.g. paræsthesia, hyperæsthesia, or anæsthesia, along the course of the affected nerve.

Sometimes partial paralysis may follow an attack of herpes ; the most common type being facial paralysis following herpes in the course of the trigeminal nerve. The cause is difficult to determine ; it may

depend upon the same toxic agent acting upon the motor and sensory nerves. Supraorbital herpes is sometimes accompanied by paralysis of the extrinsic or intrinsic nerves of the eye, and I have seen considerable wasting of muscles, with partial loss of power, follow herpes affecting one of the nerves of the arm.

Herpes may affect any part of the integument, but a word may be said as to some of its special localisations. In general, the eruption is characterised by its systematic distribution along the course of a sensory nerve, the individual groups of lesions corresponding to the points where branches of the nerve are distributed to the skin. The eruption only invades the territory of another sensory nerve—and then but slightly—where there is some dendritic anastomosis between nerve filaments.

Intercostal herpes—herpes zoster—the most frequent type, forms a half-girdle. It does not usually correspond exactly to the distribution of a single intercostal nerve, but to several, forming a more or less extensive band. In herpes affecting the first spinal segment it is common to find a cluster of vesicles on the inner side of the upper arm corresponding to the anastomosis of the second intercostal nerve with the internal cutaneous nerve of the arm.

Facial herpes, affecting the branches of the trigeminal nerve in the skin, may also affect the mucous membranes of the cheek, the tongue, and the throat.

Supra-orbital herpes, affecting the upper branch of the trigeminal nerve, is common and usually very severe. The eruption sweeps up over the forehead from the eyebrow to the vertex of the scalp—the eyelid, the adjacent side of the nose, and sometimes the eyeball itself being affected. The accompanying neuralgia is intense. There may be paralysis of accommodation, paralysis of the levator palpebræ superioris, and of the other muscles supplied by the third cranial nerve. The cornea may be anæsthetic, and vesicles may develop upon it leading to perforation. Iritis, choroiditis, and hæmorrhagic retinitis may occur, and the vision may be permanently impaired or even lost. It is a matter of practical importance to remember that serious eye trouble is more likely to occur if the nasal branch of the ophthalmic nerve is affected, as evidenced by the appearance of herpetic vesicles on the skin of the nose. If there are no vesicles on the nose, the prognosis from the point of view of the eye is a better one.

Rarely one may have double or multiple attacks of herpes simultaneously, more than one nerve tract being involved; sometimes on different sides of the body, but more usually on one side only. A double symmetrical herpes, the homologous nerves on each side of the body being attacked coincidentally is a great rarity, though it may occur in locomotor ataxia. As a rule one attack of Herpes zoster

confers immunity against another. This is in favour of a micro-organismal cause for the disease.

The type of herpes which recurs would seem to be different in character from true zoster.

Diagnosis.—The distribution and character of the lesions are such that no difficulty in diagnosis should arise. The antecedent neuralgia, however, in the absence of any skin lesions, has often been grossly misinterpreted.

Prognosis.—In the young or in healthy adults this is always good. In the old a severe attack of herpes is sometimes the first warning of the approach of death.

Most paralyses that follow herpes are recovered from. In supra-orbital herpes the prognosis as to the eye should be guarded.

Treatment.—This should be directed to keeping up the patient's strength, easing the pain, and protecting the vesicles against too early rupture or septic infection.

Light nourishing food should be given. To ease the pain, phenazone, salicylate of soda, morphia, or quinine may be administered. In very intractable cases of neuralgia, lumbar puncture has been employed with advantage.

Locally the vesicles may be dressed with a mild antiseptic dusting powder (grs. x. Acid. Salicyl. in $\frac{3}{4}$ i. of starch powder) and covered with a light dressing, or they may be painted over with flexile collodion, or with liquid gutta-percha, to which 1 per cent. ichthyol may be added. If they suppurate they may be dressed with an antiseptic lotion or ointment.

Post-herpetic neuralgia is often greatly relieved by ionisation with salicylate of soda. Trophic changes in muscles may be improved by massage and electrical treatment.

Herpes progenitalis. Herpes menstrualis

The glans penis and prepuce in males, both on the inner and outer aspects, and the labia majora and minora in women, are frequently the seats of an herpetic outbreak.

In men the immediate cause is occasionally excessive coitus, or alcoholic excess, or mental overstrain. In women the herpetic outbreak is usually associated with menstruation; in some women almost every period is attended by an herpetic eruption. Some authorities believe that a tiny lesion in the mucous membrane, which gives rise to a slight neuritis of the nerve endings, precedes the herpetic outbreak.

Symptoms.—The actual appearance of the herpetic vesicle is preceded by some pruritus, and usually by a sharp or burning pain. The parts (especially the mucous surface of the labia) become œdematous and reddened, and there then appear several tiny grouped

vesicles, some of which become confluent, surrounded by a reddened and œdematous zone. The contents of the vesicles, clear at first, becomes a little turbid in 24–36 hours ; their thin coverings rupture easily, and a group of small, irregularly shaped, superficial, moist excoriations is left. If the lesions are on the skin-surface of the prepuce or labial margins, or on the glans penis in men whose prepuce does not cover it, the roof of the vesicles is stronger, and may not rupture. The vesicles then dry up, and a crust forms which falls in a few days.

Herpes progenitalis runs its course in a week or ten days. In many cases the adjacent inguinal glands swell ; but they do not suppurate.

The lesions, usually localised to a small area, may occasionally spread extensively, involving the whole extent of the sheath of the penis, and spreading to the urethral mucous membrane ; or, in women, to the vagina and cervix uteri.

Differential Diagnosis.—As a rule the diagnosis is easy, and in most patients there is a history of recurrences. Since, in the male, coitus often precedes the eruption, confusion may arise with venereal sores, especially after the vesicles rupture.

Herpes.	Soft sore.	Syphilitic chancre.
Outline polycyclic, corresponding to the convex outer borders of the individual vesicles.	Outline irregular.	Outline oval or circular.
Lesions multiple, but grouped.	Lesions may be multiple, but if so are usually on contiguous surfaces.	Lesion single.
Runs a short course.	Duration longer than herpes.	Evolution progressive.
No underlying induration, but œdema.	No induration.	Induration characteristic.
No spirochæta found.	Ducroix's bacillus found.	Spirochæta present.

Prognosis.—This is always good, but the tendency to recurrence is very marked.

Treatment.—As a preventive of herpes progenitalis scrupulous cleanliness is one of the best agents. The parts should be washed daily to remove sebaceous secretion, and afterwards may be dabbed with a mild astringent lotion, *e.g.* a 2 per cent. solution of tannic acid, and dusted with oleate of zinc powder, or talc and zinc oxide. When the attack occurs, the pain and burning, always most distressing in women, may be relieved by warm moist applications, or by the application of ichthyol, grs. ii. in ʒi. of calamine lotion. When the vesicles are in full evolution a dusting powder such as dermatol or xeroform may be used in the male, and calamine lotion in the female. If the

vesicles rupture, dermatol, xeroform, black-wash, or calamine lotion may be used.

The prolonged administration of arsenic is said to lessen the tendency to recurrence.

Herpes febrilis

Frequently at the commencement of lobar pneumonia, and sometimes in the course of an influenzal attack or other febrile disturbance,



FIG. 66.—Herpes febrilis.

there is an outbreak of herpetic vesicles on the lips, the *alæ nasi*, the ears (rarely), the cheeks, the mucous membrane of the tongue, the gums, or the tonsils (Fig. 66). The outbreak may be severe, and last as long as a fortnight. Baerensprung has suggested that these outbreaks depend on an affection of the *ganglion incisivum*, but it is perhaps more probable that they proceed from some peripheral neuritis occasioned by toxins in the circulating blood.

The treatment should be protective, in the form of powders or drying lotions. If the vesicles rupture the raw places left should be dressed with a mild antiseptic ointment.

RECURRING HERPES IN CHILDREN

Some children are subject to recurring herpetic outbreaks on the face, the favourite situations being the cheek or chin. The outbreak is sudden, without prodromal subjective symptoms. A reddish dusky patch appears on the skin, and quickly becomes studded over with vesicles. The eruption subsides in a few days, leaving sometimes a slightly pigmented scar which I have known to be mistaken for lupus. Recurrence takes place, usually in the same situation, at intervals varying from a few weeks to several months. No cause for the original attack nor for the recurrences has been determined.

The best treatment is protection, with soothing lotions. Prolonged administration of quinine in small doses, or of arsenic, may lessen the tendency to recurrence.

Molluscum contagiosum

Definition.—Molluscum contagiosum is a form of benign tumour of the skin, caused by a filter-passing virus. It is moderately contagious, and its appearance is definite and characteristic.

Etiology. In consequence of its contagious nature its microbic origin has long been suspected. Its contagiousness was recognised by the frequency with which it is met with in several members of one family at the same time ; by the fact that epidemics of it have occurred in schools ; by the development of lesions on opposed skin surfaces in the same patient, and by the results of experimental inoculations.

Some years ago I saw a case of family infection in which three generations—grandmother, mother, and baby—were affected. The grandmother had suffered for some years—the lesions being on her face. The baby developed lesions on its face, from direct contact while being fondled by the grandmother ; and the mother, who was suckling the infant, developed mollusca on both breasts. Such cases, which are not infrequent, all supported the idea of a microbic origin, and protozoal, coccidial and other parasites were from time to time suggested. But the experiments of Wile and Kingery have supplied us with some definite knowledge as to the etiology of the condition. They removed molluscum lesions with a curette, and ground them in a mortar with sterile saline, filtering the resulting mash through a fine Berkefeld filter under negative pressure. The filtrate thus obtained produced no growth on ordinary culture media, but when injected intracutaneously into human beings papular lesions developed in from 12–21 days at the site of injection, and the papules rapidly assumed the characteristic appearances of *M. contagiosum*. After a developmental period of two months the lesions were examined histologically, and were seen to be true mollusca.

Clinical Appearances.—The mollusca are little rounded growths, flesh coloured or whitish, sessile and never pedunculated, though sometimes slightly constricted at the base, which vary in size from a pin's head to a bean. They occur in both sexes, and may be met with

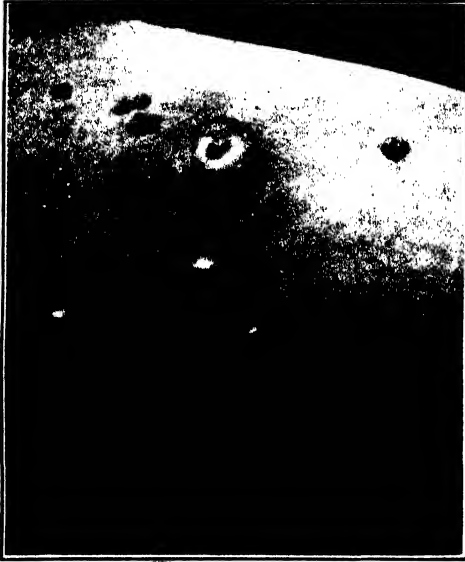


FIG. 67.—Molluscum contagiosum. Note the umbilication. The central lesion is suppurating.

at any age, but they are most common in childhood. They may occur on any part of the skin, but are most often found on the face, the neck, the thighs, the forearms, and the genitals. They vary in number from a single lesion to a multitude.

A typical molluscum contagiosum has a very characteristic appearance (Fig. 67). It rises as a globular mass from an uninfamed skin, without any underlying infiltration. It is somewhat hard in consistence. The surface of the globular mass is depressed in a dimple or umbilication—said to resemble the hole in a pearl shirt-button. This dimpling is very characteristic. On

squeezing a mollusc firmly from side to side one can express a quantity of waxy-looking material, resembling sebum in appearance but lacking its characteristic odour. Under the microscope this material is seen to consist of "molluscum corpuscles." Sometimes a mollusc will attain large dimensions, especially upon the scalp. Sometimes supuration occurs, and the typical characters of the mollusc are disguised; but the presence of other molluscs in the neighbourhood, unaffected by secondary infection, will supply a clue to the diagnosis. The lesions may persist for months or years, growing slowly, but sometimes ceasing to grow and remaining stationary. Spontaneous recovery may occur, usually through supuration, but sometimes without it.

Histo-pathology.—On section the molluscum is seen to be a lobulated tumour (not unlike an orange), surrounded by a connective tissue capsule. The lobules are elongated, and arranged so that their long axes converge towards the dimple visible on the surface of the lesion. The lobules are separated from each other by their connective tissue septa and are packed with epithelial cells. Among

these are a number of greatly enlarged round or oval cells, whose protoplasm has undergone colloid or hyaline degeneration, their nuclei being pushed to the side. These cells are the so-called "molluscum bodies," and were at one time regarded as the parasite which caused the disease. This idea is now given up.

Many believe that the lesions are always related to the pilo-sebaceous structures of the skin; but modern opinion—strengthened by the researches of Kingery * on the histogenesis of the condition—holds that the molluscs are pure benign epithelial tumours produced by proliferation of the rete Malpighii under the influence of the virus of the disease.

Diagnosis.—The appearance of the lesions is so characteristic that confusion should not occur. The dimple on the summit of the globular mass is a most valuable sign. A suppurating mollusc may be difficult to identify, but in its neighbourhood there is almost certain to be one or more typical lesions.

Treatment.—The growths may be snipped off at the base with a pair of sharp scissors, or scraped away with a sharp spoon. Or the contents may be expressed with or without incising the tumours. If very numerous they may be treated by inserting a wooden spicule soaked in tincture of iodine into the central orifice and leaving it for a couple of minutes, or a few may be dealt with daily by injecting a couple of drops of 1-20 carbolic solution into them. Treatment with ultra-violet light often clears up an eruption rapidly. The condition is always curable, and there is no tendency to relapse if all the lesions are dealt with.

Verrucæ or Warts

As already mentioned, Wile has succeeded in proving that the special type of wart known as *verruca plana* is due to a filter-passing virus. Though as yet there is no definite proof that the common wart—*verruca vulgaris*—is due to a similar cause, Wile's discovery is a presumptive proof that it may be.

Definition.—*Verruca vulgaris* is a benign neoplasm consisting of a circumscribed hypertrophy of the epidermis, the layer chiefly involved being the stratum corneum. There is an accompanying hypertrophy of the papillary layer.

Etiology.—The common wart has a low degree of infectivity. It has long been believed to be due to some micro-organism. As already indicated, it is probably due to a filter-passing virus.

Description.—The common wart—which is usually multiple—consists of a small mass of tissue projecting in a varying degree above the surface of the skin. At first pin-point in size, and smooth on the

* *Archives of Dermatology and Syphilology*, May, 1920.

surface, it rapidly increases in size: its surface becomes somewhat rough and horny, and its colour changes from that of the normal skin to a greyish or brownish red. Warts may be sessile or pedunculated. Their favourite situations are the backs of the fingers and hands, the palms, the face, the scalp (where they tend to become filiform), and the soles, where they assume a somewhat special character, and consist of a flat mass of horny tissue, level with the adjacent skin, and surrounded by a tight ring of horn cells which shuts them in. On dividing this ring the wart is freed. Common warts persist for an indefinite time, tend to multiply in number, but may disappear spontaneously.

VERRUCA PLANA (juvenilis).—The common flat wart met with in children or young adults is usually multiple, and appears chiefly on the hands and wrists or the face; though it may occur on any part of the integument. These warts spring from the normal skin, without any visible sign of inflammation, and are small, round, flat-topped, smooth excrescences. On examining their surface with a lens, however, the smooth surface is seen to be frequently more apparent than real, many of them being superficially uneven. Usually they are somewhat darker than the normal skin, and are not hard to the touch. They vary in size from a lentil to a pea, and adjacent warts may become confluent to form a kind of warty plateau. They are indolent and persistent, with a strong tendency to multiply, and they frequently disappear spontaneously.

The *FILIFORM WART* is irregular in contour because of the undue overgrowth of one or more of the papillæ. It is softer than the flat wart, and is often pedunculated. It is frequently met with on the scalp in individuals suffering from seborrhœa, and for this reason it is sometimes referred to in this situation as the seborrhœic wart. It may exhibit a number of fine spicules on its free edge.

CONDYLOMA ACUMINATUM, or venereal wart, is a special fungating variety of wart. It has not been definitely proved that this type of wart is due to a filter-passing virus. Some believe it is due to a spirillum constantly found in the warts. It is met with on the genitals, especially under the prepuce in man and on the vulva in women, and in both sexes round the anus and on the inner side of the thighs adjacent to the genital organs. These warts affect both skin and mucous membrane, and are pale red in colour. They begin singly, but multiply rapidly. The primary lesion is a tiny reddish macule, on which a papule develops. The papule grows rapidly, undergoes partial division at its free edge, and ultimately becomes a lobulated and pedunculated tumour—a cauliflower-like excrescence. Adjacent warts become confluent and large fungating masses are formed. The surface tends to become eroded, and the warts discharge a dirty, fetid sero-pus.

In the retro-glandular sulcus under the prepuce in the male these warts may become so exuberant as to resemble a cock's-comb. If the prepuce is tight, they may, by ulceration, actually penetrate through its whole thickness to the surface, and fungate through the orifice thus produced. Or they may project through the preputial opening.

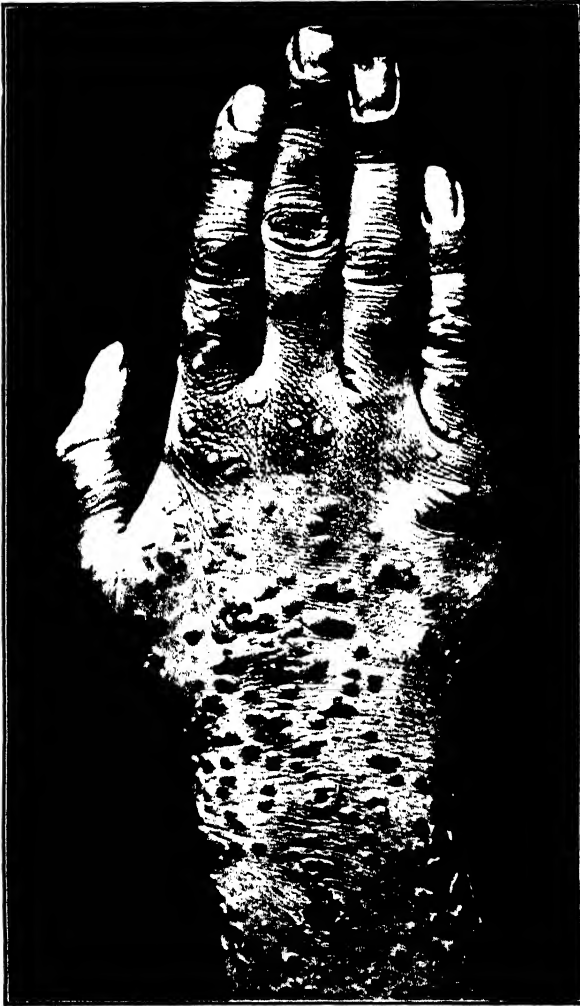


FIG. 68.—*Verrucae planae*, juvenile warts.

These venereal warts, which are only special varieties of ordinary warts, were for many years believed to be of gonorrhœal origin. C. W. Cathcart, of Edinburgh, was one of the first to dispute this. More recently it has been suggested that the *Spironema refringens*, which is frequently found upon them, is the cause ; but this is not proven.

Whatever the cause may be—and it is possible that a filter-passing virus is the etiological factor—there is no doubt that the irritation of excessive moisture, the hyperæmia, and the temperature of the parts are all predisposing causes.

Diagnosis.—The diagnosis is as a rule easy, but I have known an epithelioma in the retro-glandular sulcus mistaken for a venereal wart.

An *epithelioma*, however, has a characteristic hard base, infiltrates the underlying tissues, and bleeds easily from its ulcerated surface, while a *venereal wart* springs from apparently healthy tissue, does not infiltrate, is soft, and on careful examination is seen to consist of a number of confluent vegetating excrescences, each with its own point of origin from the affected skin or mucosa.

VERRUCA SENILIS OR SENILE WART: "SEBORRHOEIC WART"

There is no evidence that *Verruca senilis* is due to a filter-passing virus. It is included here for convenience.

It is a variety of wart met with in old people, especially on the face and trunk, more particularly on the back. Senile warts consist of flat, sessile excrescences, grey, brownish, or black in colour. Irregular in outline, their surface is slightly uneven, and if one scrapes it one can easily remove small masses of horny debris. They occur most often in people who suffer or have suffered from seborrhœa. As a result of chronic irritation, and senile changes in the skin, they may become malignant. They should therefore be removed early. This may easily be done with a sharp spoon, the bleeding base being afterwards touched with a styptic or mild caustic.

TREATMENT OF WARTS

1. ***Verruca vulgaris* and *Verruca plana*.**—Medicinal means may first be tried. A wineglassful of freshly prepared lime water taken thrice daily will sometimes cause the warts to disappear in the course of two or three weeks. Sulphate of magnesia taken in such doses as will cause two or three liquid motions a day has often been known to cause their disappearance in a week or two.

Locally, various caustics may be used, *e.g.* application of the silver nitrate pencil thrice a week, picric acid solution (1 per cent.) daily, nitric acid or acid nitrate of mercury once a week. The last two agents are very powerful and should be used with caution. A safe and satisfactory application is glacial acetic acid, applied daily with a glass rod or piece of matchwood.

In some cases curetting with a sharp spoon, under a local anæsthetic, gives the most rapid results. The raw surface should be touched lightly with the silver nitrate pencil, and then dressed with salicylic ointment or 1-4,000 solution of biniodide or perchloride of mercury.

Ionisation with magnesium ions (from a 10 per cent. solution of magnesium sulphate) has been recommended, but in my hands has not given very good results. The positive pole should be attached to the magnesium pad, and the current should be allowed to pass for 20–30 minutes. It is advisable to abrade the cuticle over the warts with a sterilised needle before applying this treatment, in order that the entry of the magnesium ions may be facilitated.

A pencil of carbon dioxide snow applied with firm pressure for 30–40 seconds over each wart will often cure when other means fail. The cosmetic result is excellent. The application of the X-Rays— $\frac{3}{4}$ of a full pastille dose without a filter—will frequently cause the complete disappearance of an extensive crop of warts in 17–21 days.

The **filiform wart** on the scalp may be removed with the curette, the bleeding base being afterwards touched with a silver nitrate pencil.

The so-called **venereal wart** should be treated by scrupulous disinfection of the parts with lotions of perchloride or biniodide of mercury, or with eusol, followed by the free application of a drying dusting powder such as xeroform, or salicylic acid and talc powder in the proportion of 1 : 3. This treatment should be repeated several times daily. If this fails, they may be touched, after careful drying, with the silver nitrate pencil, and immediately afterwards brushed over with a crystal of chromic acid fused on the end of a probe. Chromate of silver, which has a strong siccative effect, is produced *in situ*. The treatment may be repeated at intervals of a few days till the warts disappear. (If they are under the prepuce, the unaffected mucosa must be protected from the chromate of silver by the insertion of a piece of cotton-wool.)

After the warts have disappeared the parts should be kept thoroughly clean, and dusted daily with a drying powder.

Fulguration with a high-frequency spark, under a general anæsthetic, may be employed; or the warts may be touched with a galvanocautery needle. Sometimes surgical measures are required. The warts may be snipped off or curetted away. Hæmorrhage is free, but easily controlled. The raw bases may be touched with silver nitrate, chromic acid, or both.

Whatever the treatment, these venereal warts have a most obstinate tendency to recur. This tendency may be controlled by scrupulous cleanliness and the free use of dusting powders to keep the parts dry. It is worthy of note that if a pregnant woman is treated for venereal warts during gestation, they are almost certain to recur before the pregnancy terminates. The excessive secretions from the vagina and the abnormal blood supply of the parts during pregnancy are the factors responsible for this.

CHAPTER IX

FOCAL INFECTIONS AND SENSITISATION TO FOREIGN PROTEINS

FOR many years it has been recognised that the activity of a colony of microbes in any organ of the body may be followed by marked changes in other organs at a distance from the original focus of infection. For example, in diphtheria the focus of infection is usually in the throat, but by absorption from that focus of toxins produced by the Klebs-Löffler bacillus serious damage may be done to remote organs—more particularly to the cells of the nervous system. Similarly, in scarlet fever, the chief focus of infection is the throat, but there is a subsidiary manifestation of this focal infection which expresses itself through the skin in the scarlatinal eruption. Syphilis, too, may be classed as a focal infection, in so far as the primary sore is the focus in which the spirochæta multiplies prior to its systemic diffusion.

The remote effects of focal infections are produced in two ways : either by (1) a systemic invasion by the microbe from the original focus ; or (2) by the absorption of toxins produced locally, into the general circulation.

As the skin is an organ of the body and not a mere covering, it is liable to suffer, in common with other organs, from toxins absorbed or bacteria disseminated from a focus of microbic activity situated anywhere in the body. When the focal infection is acute, and the associated cutaneous manifestations are also acute, as in scarlatina or measles, the relationship between the primary infection and its subsidiary expression through the skin is readily recognised—and the two together are regarded as forming part of the symptom complex of the disease. But in chronic conditions the relationship between the focal infection and the symptoms depending upon it is often more difficult to determine.

Long ago Sir Andrew Clark used to treat anæmia in young ladies by the free administration of saline purgatives. He recognised the large bowel as a potential source of hæmolytic poisons. More recently Sir Arbuthnot Lane has indicated a series of symptoms which may arise from chronic intestinal stasis. Some of these symptoms manifest

themselves in the skin. For example, the complexion is muddy and pale, there is a tendency to a dirty yellowish pigmentation of the eyelids and skin of the axillæ, the nose and ears are often bluish, the skin at the back of the upper arms tends to become coarse, the hair becomes prematurely grey, and in women there is a proneness to develop hair on the chin and cheeks. He has seen all these symptoms disappear after colectomy or ileo-colostomy.

These were pioneer observations on focal infection, but recently a vast field for observation and fruitful speculation as to the relationship between chronic bacterial infections in remote organs, and certain chronic dermatoses has been opened up by the work of H. W. Barber * and H. Leslie-Roberts † in this country, and by J. Danysz ‡ in France. Their researches tend to show that any trough, crypt, or niche that can offer a lodgment for bacteria, from the alveolar sulcus in which the teeth are set, to the anal orifice, may be the site of a focal infection responsible for lesions on the skin. Barber and Leslie-Roberts have shown that in patients suffering from various skin lesions the crypts or follicles in the tonsils are commonly the home of streptococci; and in several instances the dermatosis has cleared up after the enucleation of the tonsils.

A focal infection does not require to be locally active in order to produce its remote effects; *e.g.* a patient may suffer from infected tonsils without complaining of "sore throat," and yet from his tonsils toxins or microbes are passing into the circulation and producing obscure skin lesions either by damaging the blood-vessel walls, the integrity of the structure of the skin cell, or interfering with the nutrition of such structures as the hair bulbs. So with organismal activity in the bowel. There may be no apparent gastro-intestinal derangement, but, as Danysz has shown, the remote effects on the skin may be marked.

When a skin eruption, *e.g.* the secondary rash of syphilis, occurs by the systemic dissemination of micro-organisms from the original focus of infection we are dealing with a set of phenomena easy of explanation. But when the skin lesions are produced by microbic toxins, elaborated focally, and absorbed into the blood-stream, we are face to face with a problem beset by immense difficulties and as yet obscure. The toxin enters the blood as an undigested foreign protein—or a focal antigen. Its repeated introduction into the blood, either continuously in small doses, or spasmodically in larger doses, sets in train a series of processes that may lead to cell damage or cell destruction—and some of this cell damage may express itself in the skin. Focal infection is

* *Proc. Roy. Soc. Med.*, XIII. pt. i.-v. p. 94.

† *Brit. Journ. of Derm. and Syph.*, Oct. 1921, p. 319, and Nov. 1921, p. 353.

‡ "Origine Evolution et Traitement des Maladies Chroniques non contagieuses," par J. Danysz. Paris: Bailliere et fils. 1920.

therefore seen to be linked up with the problem of anaphylaxis and the question of sensitisation to foreign proteins with which we shall now deal.

Anaphylaxis and Sensitisation to Foreign Proteins

If an animal such as a guinea-pig, dog, or rabbit be injected with substances such as bacteria and their toxins, or foreign proteins such as egg albumin, and the injection of the same substance be repeated after an interval of ten to fourteen days, this second injection may be followed by an immediate, severe, and sometimes fatal reaction. Richet, who was the first to take special notice of the phenomenon, applied to it the name of Anaphylaxis—regarding it as the direct opposite of “phylaxis” or immunity. The name, though not a very appropriate one, has come to stay.

Further investigations prosecuted by Richet and many others determined the fact that a definite time interval must elapse between the first and the second injection, if the graver symptoms are to be produced. If the second injection be given before ten days have elapsed, the animal does not exhibit any special symptoms, and apparently develops some degree of immunity against further injections of minute doses spread over weeks or months. Further, if the second injection is administered after ten days, *i.e.* when the “anaphylactic state” has been established, serious consequences may not follow if the second dose is a minute one, and it may be increased gradually without disaster. Repeated observations of this kind stimulated the bio-chemists to further research, and, as Dale * has said, “It soon became clear that anaphylaxis was not a state of diminished resistance to the action of a normally poisonous protein, but a condition in which a previously injected protein, whether naturally poisonous or not, acted like a poison of a very acute type.”

The mechanism of anaphylaxis is still obscure, but the following explanation has been suggested. The first (sensitising) dose of foreign protein (*antigen*) provokes the formation of antibodies. When the second dose of antigen is administered there is a bio-chemical reaction between *antigen*, *antibodies*, and *complement* which breaks the albumin molecule down, and a toxic product provisionally called *anaphylatoxin* is produced. This may produce the graver features of anaphylactic shock, or minor symptoms such as flushing and irritation of the skin, diminution of the coagulability of the blood, leucopenia and depression of metabolism, with lowering of the blood pressure and emaciation. The reaction between the antigen and the antibody is believed to take place in the cells. If the reaction is severe, and the cells are those of vital organs, the issue in death is readily understood. If, on the other

* *Proc. Roy. Soc.*, vol. 91, p. 126.

hand, the reaction is slight, but repeated over and over again through the passage of antigen in small doses into the circulation from some septic focus, we can readily understand how damage to capillary vessels and the cells of the skin may be brought about, with resulting cutaneous manifestations.

Now it has been shown by Arthus, Barnathon, and Nobecourt * that sensitisation to a foreign protein may be produced by the absorption from the alimentary tract of proteins incompletely hydrolysed because of some digestive irregularity ; and Van Alstyne † has made observations that led her to conclude that certain proteins are absorbable, in an unaltered state, through intact alimentary epithelium, but that the phenomenon is favoured by trauma. She further pointed out that the absorption of unaltered proteins was increased by conditions which interfere with digestion.

These foreign proteins in the blood establish a kind of anaphylactic state ; they sensitise the patient, and render the skin allergic, *i.e.* ready to react to the local inoculation of the protein to which the person is sensitised.

As a consequence of these and similar observations a series of cutaneous tests, in which the reagents are foreign proteins, have been elaborated with a view to discovering the particular protein—bacterial or food—to which a patient has become sensitised.

Between two and three hundred of these test proteins have been prepared, but more recently, to simplify their use “grouped protein tests” have been put on the market.‡

The manner of their use is as follows :—

The skin of the forearm is cleansed with ether, and a series of superficial excoriations is made with a fine scalpel. On each excoriation a drop of deci-normal sodium hydrate solution is placed, and a small quantity of the proteins whose action one is anxious to note is rubbed into each abrasion with a platinum loop, flamed before and after each application. Controls are made with the soda solution alone. In from ten to thirty minutes the reactions should be read. They consist of wheals and surrounding erythema. A wheal without erythema and no larger than the wheal produced on the control excoriation is “negative.” A wheal half as large again as the control wheal, and surrounded by erythema, indicates a positive reaction, and there are degrees of positiveness up to + + + (the assessment being somewhat arbitrary), according to the size of the wheal and the intensity and area of the erythema.

* P. Nobecourt, *Compt. rend. Soc. Biol.*, 66. 850. 1909.

† E. V. van Alstyne, “The absorption of Protein without Digestion.”

‡ The “grouped protein tests” are procurable from Messrs. Duncan, Flockhart & Co., of Edinburgh.

A positive reaction produced by any particular protein indicates that the patient has been sensitised to that particular protein by absorption of it from some focus in his body.

A priori one might expect that these tests would be most valuable aids toward eliminating from a patient's diet any toxic food factor: and in many cases this is found to be true. But in other cases the reactions are so indefinite, uncertain and sometimes complicated, that instead of clearing the situation they tend only to cloud it further. However, they ought to be tried carefully in all obscure cases where sensitisation to toxic foreign proteins is suspected.

Having proved by observation or by test that some article of diet is definitely noxious to an individual, one may cut it out of the diet completely: or endeavour to desensitise him against its effects by administering a minimal quantity an hour before the meal in which the article is to be represented. For example, if strawberries produce urticaria in a patient he may, an hour before partaking of strawberries and cream, eat one strawberry. This may—possibly aided by the compelling power of faith—prevent an outbreak of urticaria. Or an attempt may be made to desensitise by the injection of Auld's peptone—as for asthma: or by the administration of peptone by the mouth in doses of $\frac{1}{2}$ gm. forty-five minutes before food. A compound peptone derived from the peptones of meat, fish, eggs, and milk, is procurable under the name of Peptalmine. It is supplied in capsules and in a granular form. It should be administered an hour before food. In certain cases of alimentary anaphylaxis it has given good results in my hands. In others it has failed.

It will be readily understood that in the doctrines of focal sepsis and sensitisation to foreign proteins we may have found a clue to the etiology of many skin conditions whose precise cause has hitherto been obscure. But caution is necessary. We must not be too ready to explain all conditions that baffle us by appeal to bio-chemical reactions that in themselves are obscure and still the subjects of controversy. But by exact observation and the careful accumulation of facts we may ultimately reach certainty.

With these observations we may proceed to describe certain diseases of the skin in which focal sepsis and sensitisation to toxic foreign proteins play a part.

CHAPTER X

THE ERYTHEMATA

(SOME OF WHICH ARE DUE TO FOCAL SEPSIS)

ERYTHEMA means redness. This redness may be an essential or, indeed, chief feature of the disease, as in **Erythema multiforme**, or it may be the accidental accompaniment of some other disease, *e.g.* deep-seated suppuration may be associated with an erythematous blush upon the skin overlying it.

Primarily an erythema which is, in pathological terms, a cutaneous hyperæmia depending partly upon the nervous and partly upon the circulatory system, consists of one or more reddish macules, which disappear under pressure to return again when the pressure is removed. When, however, the underlying vascular disturbance is severe or prolonged, the macule may be associated with or replaced by papular, vesicular, or bullous erythematous lesions. The papular lesions are produced by a small-celled infiltration of the papillæ, and the vesicles and bullæ by the escape of serum from the dilated vessels, causing a tense elevation of the overlying epidermis.

Erythema exudativum multiforme

Definition.—An acute disease of the skin characterised by the appearance of rose-red lesions of varying form, with exudation into the deeper layers of the skin.

Etiology. The symptomatology leads one to believe that it is due to some toxin circulating in the blood. As a rule there are prodromal symptoms: malaise, rise of temperature, gastro-intestinal disturbances, coryza, tonsillitis, or pains in the joints. These symptoms may precede or coincide with the appearance of the eruption. The precise cause is undetermined. It is possible that more than one infection may be capable of producing the cutaneous eruptions of multi-form erythema; but its association with “rheumatism” is undoubted, or, to express oneself more accurately, its association with muscular or joint pains indistinguishable from rheumatic pains is proved.

Histo-pathology.—The blood vessels beneath each lesion are dilated. There is leucocytic infiltration round the blood vessels, and,

in consequence of the inflammation, there is some thickening of the horny layer. There is invariably some exudation, and this may vary so that the epidermis is slightly raised so as to form a vesicle, or lifted up and stretched so that bullæ are formed.

Symptoms and Course.—Both sexes are affected—the female more commonly. As a rule **E. multiforme** affects young adults, but it may occur at any age. A patient may have more than one attack, and in some patients there is an annual recurrence for several years. The disease is most often met with in spring and autumn. After certain prodromal symptoms, of which in my experience an attack of



FIG. 69.—Erythema multiforme.

tonsillitis with rise of temperature is the most common, there develops, usually symmetrically on both arms or both legs, or on both hands and both feet, a diffuse, discrete, macular rose-coloured eruption. The dorsal aspect of the limbs is more frequently affected than the anterior, and sites of predilection are the back of the fingers and hands (Fig. 69), the dorsum of the foot, and the neighbourhood of the elbows and knees. The lesions, which are of varied shapes—diffuse erythematous macules, papules, circular plaques—and which are attended by a sensation of itching, burning, and fullness, are at first a bright red. Later the centre sinks, and its colour darkens, the periphery retaining its

vivid hue. To the touch the lesions are soft and velvety, and may be temporarily obliterated by pressure. They tend to subside in from a week to a month, and sometimes are succeeded by slight local desquamation and pigmentation.

Sometimes the inflammatory process and the accompanying exudation are so great that vesicles or bullæ are formed (**Erythema bullosum**) (Fig. 70). This occurs most often near the wrists or other joints. The vesicles and bullæ dry up, forming scales or crusts,



FIG. 70.—Erythema multiforme.

A severe attack : many of the lesions bullous.

which by and by separate. In severe cases superficial ulceration may follow the rupture of a bulla—but this generally heals rapidly. The mucous membrane of the mouth, tongue, and pharynx, as well as the conjunctiva may be affected in severe cases, the lesions taking the form of raised red plaques or sometimes vesicles.

Even if untreated the disease tends to disappear spontaneously in from a fortnight to six weeks, but relapses are common.

Complications.—The eruption is probably itself a complication of some systemic infection, so that the cardiac, pleural, and joint

conditions which are sometimes associated with it are not so much complications of the skin disease as manifestations of the morbid effects of the underlying cause. Hepatic and splenic enlargement and albuminuria have been reported in some cases.

Diagnosis.—As a rule the diagnosis presents little difficulty, but *E. bullosum* may be confused with *Pemphigus*. In the latter disease, however, the bullæ arise from normal skin—not from a red base. In extensive cases confusion may arise with *small-pox* : but the lesions of variola begin as shotty papules, and pass through stages to umbilicated pustules.

Lupus erythematosus may be confused ; but *E. multiforme* is never scaly, and runs a more rapid course.

Treatment.—Rest in bed if possible ; preferably between blankets. The diet should be nourishing but light ; red meat and articles of diet rich in purin bodies should be forbidden.

Internal Treatment.—The bowels should be kept freely open with saline aperients, preceded by a dose of calomel. If there is reason to suspect an intestinal toxæmia, give intestinal antiseptics, such as salol, kerol or dimol. The salicylates—salicylate of soda, salicin, or aceto-salicylic acid—should be administered in full doses. In recurring cases collosol sulphur in doses of two teaspoonfuls thrice daily after food is useful.

Local Treatment.—The burning and itching are greatly relieved by the use of calamine lotion to each ounce of which grs. 2 of ichthyol may be added. Dusting powders of talc and oxide of zinc are also useful. If bullæ develop they should be pierced with a sterilised needle, and then dressed with Lassar's paste.

Erythema iris or **Herpes iris**, the latter of which is not a good name, may be regarded as a specialised form of Erythema multiforme, in which a majority of the lesions assume a special contour and character. A typical lesion exhibits a central bulla of varying size, surrounded by an erythematous zone, or sometimes by more than one concentric zone, each paler than the other. The eruption is met with chiefly on the backs of the hands, the wrists and lower parts of the forearm—though it may occur on any part of the body. The lesions are always discrete and few in number. Sometimes the central vesicle is not well marked, but the concentric rings may be plainly discerned.

The erythema tends to subside in about a week ; the contents of the vesicle are re-absorbed or escape, and a crust forms, which soon separates. Occasionally the lesions come out in successive crops, in which case an attack may last for several weeks. The treatment is the same as for Erythema multiforme.

Erythema Nodosum.—This is a special type of Erythema related to but not identical with *E. multiforme*.

Definition.—An acute painful disease of the skin, characterised by the appearance, usually on the extensor aspect of the legs below the knees or on the extensor aspect of the arms below the elbows, of rounded or oval, bright red, tender nodes.

Though the legs and arms are the favourite sites for these swellings, they may be met with elsewhere, *e.g.* on the neck.

Etiology.—It was long believed that *Erythema nodosum* was due to the rheumatic poison. Of recent years doubt has been cast on this opinion, for this form of erythema may be met with apart from all other evidences of acute rheumatism.

It may be due to some specific poison circulating in the blood and producing local damage with consequent local manifestations, or it may be due to a poison capable of producing other diseases, *e.g.* quinsy, endocarditis, etc. Until the causation of rheumatism and associated diseases is cleared up the precise cause of *Erythema nodosum* is likely to remain obscure. Meantime there is little doubt that it is the by-product of some focal infection. Of special organismal causes three have been suggested :

1. The *tubercle bacillus*. This may be a cause, for patients have died of tubercular meningitis soon after an attack of *E. nodosum*; but on the other hand the tubercle bacillus does not usually differentiate between the sexes—and *Erythema nodosum* is twice as common in females as in males. Further, *E. nodosum* is a disease of adolescence, and is not common in childhood, when the body is most liable to attack by the tubercle bacillus. Finally, inoculation experiments with blood or the tissue of the nodes from affected parts have given consistently negative results.

2. A *diphtheroid organism* discovered by Rosenow.

3. A *streptococcus*. This latter seems to me the most likely cause. It would explain many of the other symptoms of the disease besides the typical erythematous nodes.

Pathology.—The nodes are embedded in the true skin and the subcutaneous tissue. The epidermis is stretched. The capillaries are greatly dilated, and sometimes one or other of them will rupture, with effusion of blood into the true skin.

Symptoms and Course.—The disease is one of adolescence, females being affected about twice as often as males. Prodromal symptoms are rise of temperature, with malaise, sometimes sore throat, and gastro-intestinal disturbances, *e.g.* sickness, diarrhœa or constipation, and frequently severe pains in the joints. This symptom is responsible for the belief that the disease is of rheumatic origin.

As the prodromal symptoms subside, or sometimes while they are still active, there appear usually on the extensor aspects of the limbs, below the elbows and knees, one or several tense, brightly red, very

sensitive swellings, rounded or oval in shape. Hard to the touch at first and vivid red in hue, the nodes later become softer, so that they give the impression of containing a small amount of fluid, and at the same time the bright red colour subsides into a dusky lividity. Though the nodes become softer *they never suppurate*. After ten or twelve days the nodes undergo re-absorption, leaving behind a bluish hæmorrhagic discoloration which may change colour from blue to green, and from green to yellow ere it disappears completely (**E. contusiforme** from its resemblance to a contusion). As one crop of nodes disappears another may arise, so that the attack may last for several weeks. One attack of the disease would not seem to confer any immunity, but recurrences are not frequent.

Complications.—As already indicated, there may be simultaneous involvement of the throat and joints, and pleurisy, endocarditis, and pericarditis have been met with in association with Erythema nodosum. It would be wrong to say that these conditions are produced by Erythema nodosum. The probable explanation is that the organism which is responsible for producing the lesions of Erythema nodosum is also capable of producing these conditions.

Diagnosis.—Erythema nodosum must be distinguished from tubercular and syphilitic gummata of the skin. The differential features may best be summarised in tabular form.

ERYTHEMA NODOSUM.	TUBERCULAR GUMMA.	SYPHILITIC GUMMA.
Onset : acute with prodromal symptoms.	Onset : gradual ; indolent.	Onset : Gradual.
Situation : front of legs ; back of arms.	Situation : usually back of legs.	Situation : anywhere.
Pain : acute ; sensitive to touch.	Pain : absent ; insensitive.	Pain : absent ; insensitive.
Colour : bright red.	Colour : at first colourless ; then dusky reddish-blue.	Colour : colourless at first ; becomes reddish when about to break down.
Course : rapid, subsides in few weeks without sup-puration.	Course : chronic ; suppurates.	Course : chronic ; suppurates unless treated.
Incidence : affects adolescents chiefly ; females most often.	Incidence : affects young chiefly ; no discrimination of sex.	Incidence : chiefly adults ; no discrimination of sex.

ERYTHEMA NODOSUM.	TUBERCULAR GUMMA.	SYPHILITIC GUMMA.
Cause : undetermined	Cause : the tubercle bacillus or its toxins.	Cause : the spirochaeta pallidum.
Blood Reaction : Wassermann test negative. Tuberculin tests usually negative.	Blood Reaction : Wassermann test negative. Tuberculin tests positive.	Blood Reaction : Wassermann test positive. Tuberculin tests negative.

Prognosis is good.

Treatment.—Rest in bed is imperative—preferably between blankets. Diet should be light but nourishing. Digestive disturbances should be dealt with, and a saline aperient should be given every morning. Septic foci should be sought for and dealt with. Intestinal antiseptics, *e.g.* dimol or kerol, may be given. The remedy approved by most authorities is salicylate of soda, which may be pushed to the limits of tolerance. Its congeners, salicin, aceto-salicylic acid, and salol may also be given. Potassium iodide is better avoided in these cases. For local application I believe strongly in an ichthyol paint :

R. Ichthyol, ℥iv.

Aquæ, ℥iv.

M.

Sig. To be painted on to each lesion with a soft brush night and morning and allowed to dry.

The previous applications may be gently sponged off with tepid water before the next one is made. After each application the limb may be lightly swathed in cotton-wool.

As the nodes become less sensitive and begin to undergo absorption they may be gently massaged with collosol iodine oil.

Lupus erythematosus

Probably no disease in the whole range of dermatology has a more unfortunate name than that generally known as Lupus erythematosus.

Synonyms.—Other names have been suggested, *e.g.* **Erythema atrophicans** by Sir Malcolm Morris, which is amongst the best ; **Erythema centrifugum** ; **Ulerythema centrifugum**, *i.e.* a scarring erythema which spreads centrifugally ; **Seborrhœa congestiva** ; and “ **Batswing** ” **Lupus**.

But by whatever name one decides to call it, it is important to realise that it is not a true lupus, *i.e.* a tubercular disease due to the tubercle bacillus. Indeed, its relationship to tuberculosis is extremely doubtful, and consequently I have not hesitated to include it among the erythemata, rather than among the tuberculides. Briefly the

grounds upon which I have based my opinion that it is not a tubercular affection are as follows :—

1. Tuberculosis of lungs, bones, and glands is extremely common. If Lupus erythematosus were due to the tubercle bacillus or tubercular toxins one would meet with it frequently in patients presenting definite tubercular foci. But it is comparatively rare to discover tubercular foci in patients with *L. erythematosus*, and when one remembers the enormously wide distribution of tuberculosis one may reasonably doubt whether there is any causal nexus between the tuberculous focus and the Erythema, or whether the association when it occurs is not rather one of coincidence. In this connection Goeckerman's statistics are of value. He found tuberculosis in 32·1 per cent. of a series of miscellaneous skin patients, and in 35·7 per cent. of patients with Lupus erythematosus. So that the proportion is but little higher.

2. In sanatoria filled with tubercular patients Lupus erythematosus is rarely, if ever, seen.

3. In cases of *L. erythematosus* which have ended fatally, or in which death has supervened from some intercurrent malady, a necropsy has more often than not failed to reveal any tubercular focus in the body.

4. Giant cells and tubercle bacilli are not found in the lesions of Lupus erythematosus, and experimental inoculation of susceptible animals has given negative results.

5. Lupus erythematosus is rare in children, while ordinary tubercle is common.

6. There is a growing body of opinion that Lupus erythematosus is due to some septic organism. Dr. H. W. Barber has discovered that the condition is often associated with one or more septic foci, *e.g.* in the teeth, tonsils, nose, and nasal sinuses, with secondary septic foci in the intestines and lymph glands. He has succeeded in isolating a long streptococcus, and vaccine therapy with cultures of this organism together with enucleation of the affected tonsils has given good results in several chronic cases.*

Definition.—Lupus erythematosus is a chronic erythematous disease of the skin : in most cases is confined to the face and ears : is characterised by the development of one or more reddish-blue patches, margined and usually presenting slightly raised edges, usually symmetrical in distribution, and covered by small, fine, adherent “mortary” scales.

There are two main types of the disease—**Lupus erythematosus discoides chronicus** and **Lupus erythematosus disseminatus acutus**.

Lupus erythematosus discoides chronicus

Etiology.—Obscure ; almost certainly not tubercular. Probably due to some septic intoxication of a chronic nature. Cold is certainly a predisposing factor. The disease is commonest in cold countries, and is often associated with chilblains.

Pathology.—Sections show (1) Thinning of the epidermis ; (2)

* *Brit. Journ. Derm. and Syph.*, Oct.–Dec. 1919.



FIG. 71.—Lupus erythematosus discoides chronicus.

œdema of the corium, which is packed with leucocytes and proliferative connective tissue cells ; (3) bundles of degenerative connective tissue in the corium ; (4) occasional thrombosis of capillaries ; (5) scales on the surface of the epidermis sending spicules downwards into the sebaceous follicles.

Symptoms and Course.—The disease is met with usually in adults, and affects women more often than men. It begins as small red or bluish-red lesions, slightly raised, definitely margined, and usually symmetrical in distribution, on the nose, the blush area of the cheeks, the ears, and neck. The patches tend to spread, and may become confluent. When both cheeks and nose are affected and the individual



FIG. 72.—Lupus erythematosus (Batswing type).

lesions have run into each other, the configuration of the eruption may present the appearance of a bat or butterfly with wings outspread—the nose representing the body, the eruption on the cheeks the wings. Hence the name of “ batswing ” or “ butterfly ” lupus (Fig. 71).

The borders of the patches are well marked and usually somewhat raised and slightly infiltrated. The central part is at first elevated, but later tends to become depressed in consequence of cicatricial fibrous atrophy. Actual scarring is produced—without ulceration (Plate XIV, A). The surface of the lesions is more or less covered by fine, firmly adherent dry scales. These may be picked up with fine forceps, and an examination of their under surface will frequently reveal the presence of little spicules of horny cells which anchor the scales into

PLATE XIV



(a)

LUPUS ERYTHEMATOSUS discoides chronicus

Note atrophic scarring



(b)

LUPUS ERYTHEMATOSUS of scalp

the sebaceous orifices. On examining the lesion after the removal of such a scale the patulous follicular orifices into which the spicules have fitted are plainly visible.

On the scalp *Lupus erythematosus* is met with as reddish, slightly raised patches, usually covered with fine scales, greyish in colour and easily distinguishable from those of psoriasis. Later central atrophy occurs, with permanent destruction of the hair bulbs, and consequent local and incurable alopecia (Plate XIV, B). The lesions then present oval or rounded cup-shaped depressions with raised reddish margins. In the absence of other lesions on the face it may be extremely difficult to diagnose *Lupus erythematosus* of the scalp.

Lupus erythematosus may further affect the mucous membranes, spreading into the mouth from the lips or occurring on the buccal mucous membrane without definite extension from the skin. Here it resembles *lichen planus* affecting the mucosæ, and can only be distinguished by the occurrence of lesions elsewhere.

The fingers are frequently affected, in cases in which the face is the chief site of the lesions. As a rule the dorsum of the fingers suffers most. The skin is erythematous; scaling does not usually occur; the lesions resemble chilblains; but are met with in summer as well as in winter, and are frequently followed by some superficial non-ulcerative scarring. If an ordinary chilblain leaves a scar it has ulcerated first. Occasionally the toes and the trunk are affected by *L. E. discoides chronicus*.

Lupus erythematosus disseminatus acutus

In addition to these local varieties of *Lupus erythematosus* there is a severe, generalised form which is usually acute in onset, and frequently ends fatally. This form is very rare. It is generally accompanied by a rise of temperature, and complicated by systemic symptoms, e.g. headache, pains in bones and joints, albuminuria and sometimes coma.

This acute form is not invariably fatal. Sometimes it clears up in places to reappear in others, and it may ultimately subside into the chronic form. Sometimes the lesions disappear spontaneously without leaving any trace: or they may undergo cicatricial atrophy. In an acute case, the diagnosis is often extremely difficult.

Diagnosis.—As a rule the diagnosis of *L. erythematosus discoides chronicus* is easy, provided the lesions have lasted long enough to produce the depressed atrophic-looking centre surrounded by the erythematous scaling border. *Lupus erythematosus* may, however, be confused with several other skin affections. It is sometimes a little difficult to distinguish between it and *Lupus vulgaris*. In this connection stress should be laid upon the fact that *Lupus erythematosus* is an *erythema*,

while *Lupus vulgaris* is characterised by the appearance of tubercular nodules, "apple-jelly" in colour, which tend to coalesce, ultimately clearing up in the centre while the disease spreads at the periphery. As a rule, in a case of *Lupus vulgaris*, isolated nodules may be found outside the principal lesion, while in *L. erythematosus* the lesions are definitely margined. Further, *L. erythematosus* is usually symmetrical in distribution, while *L. vulgaris* is not: and *L. erythematosus* is usually a disease of adult life, while *L. vulgaris* most often begins in childhood; and finally *L. vulgaris* is a destructive disease. *L. erythematosus* may be confused with *Acne rosacea* if the pustular element in the latter disease is in abeyance.

The fact that *L. erythematosus* has well-defined borders, and that the patches are covered with the typical "mortary" scales, and that the lesions are followed by some degree of atrophy should guide one to a correct decision.

Psoriasis of the face may readily be confused with *L. erythematosus*. But in *Psoriasis* the scales are of a different kind, being larger, whiter in colour and much less adherent, and extend right to the edge of the lesion. Further, the presence of other lesions of *Psoriasis* on the scalp, the elbows, or knees will supply a valuable clue.

Syphilis—the great imitator—in its late secondary and tertiary stages may produce lesions on the scalp and face which are hard to distinguish from *L. erythematosus*. But in syphilis the colour of the lesions is different, being reddish-brown in colour. In syphilis there is more infiltration, and the typical scales of *L. erythematosus* are replaced by larger and thin squames. The Wassermann Reaction may be of help, and the result of a course of anti-specific treatment will frequently clear up the confusion.

Chilblains on the fingers may be confused with *L. erythematosus*, and *vice versâ*. But chilblains are essentially a feature of cold weather, while *L. erythematosus* persists during warm weather. Further, though chilblains may ulcerate and leave scars, they never leave scars without ulceration, which *L. erythematosus* may do.

Seborrhæic dermatitis affecting the face may be confused with *L. erythematosus*, and Hebra's name for *L. erythematosus* of *Seborrhæa congestiva* indicates the close resemblance that the two conditions may present.

But in seborrhæic dermatitis the associated scales are soft, greasy, very slightly adherent, and easily removed; there is no real infiltration as in *L. erythematosus*, and no tendency to the production of scars.

On the scalp *L. erythematosus* may be confused with *Alopecia areata*. But in *Alopecia* the bald areas are smooth, white, shining, and not cicatricial, while the lesions of *L. erythematosus* are irregular in shape,

frequently not quite denuded of hair, and present a depressed cicatricial centre with a raised reddish border, upon which the typical scales, and the gaping orifices of sebaceous follicles are distinguishable.

Prognosis.—In the acute disseminated form the prognosis is grave. Death may ensue from some complication, *e.g.* pneumonia, endocarditis, albuminuria. In the chronic form the prognosis is good. Some cases clear up spontaneously, many are cleared up by treatment, but the disease is capricious, and tends to recur, and is markedly chronic, lasting for ten or twenty years or more. Occasionally epithelioma has been known to develop on *L. erythematosus*.

Treatment.—The acute disseminated case should be treated by rest in bed, soothing applications, and the administration of antimonial wine.

General Treatment of Chronic Cases.—Those who believe in the tubercular origin of the disease administer cod-liver oil and other up-building remedies. Many internal remedies have been suggested, *e.g.* phosphorus, arsenic, quinine, iodide of potash, ichthyol, and salicin. In my experience only three of these have given me appreciable results.

Salicin in doses of 10–12 grains thrice daily, either in cachets or in milk, has certainly influenced some cases for the better. Those most amenable are cases of recent development, in which the patches are of the definitely erythematous and spreading type.

Quinine in doses of 2 grains thrice daily, with hydrobromic acid, I have also found of use. It seems to me to act best in the more chronic cases.

Ichthyol, in capsules containing 3–5 grains, administered thrice daily, has also produced some improvement in a few cases. But for the greater part the treatment of *L. erythematosus* by internal remedies is disappointing. In the light of recent knowledge a meticulous search should be made for possible septic foci, and they should be dealt with thoroughly. A vaccine may be made from the organism found.

So far, the reports on the treatment of *Lupus erythematosus* with intravenous injections of Krysolgan are not too encouraging. Excellent results have followed its use, but there have been several deaths and some attacks of severe dermatitis.

Local Treatment.—Injudicious local treatment may aggravate the disease. The great principle to remember is that in essence the disease is an inflammation, and an inflammation should be soothed while it is in the stage of acute evolution. Later, when the active inflammatory process has settled down into a more or less chronic condition more active measures may be employed. The activity of the lesion may be judged roughly by the length of time it has been present, the rate of its spread, the intensity of its redness, and the

character of its border. Further information may be gathered from the presence of the subjective sensation of burning. It may be possible to determine for oneself by touch that the temperature of the edge of the lesion is greater than that of the surrounding skin.

Having satisfied oneself that the lesion is active, one must be content to employ sedative treatment at first.

Probably the most useful sedative application is calamine lotion. To this may be added Liq. Plumbi subacetatis dil. in the proportion of $\text{℥i.}-\text{℥x.}$ of calamine lotion, or Ichthyl grs. ii. in each ounce of lotion. The lotion should be applied several times daily, and may with advantage be washed off once daily before fresh applications are made. Even in the acute stage *L. erythematosus* seems to be tolerant of soap and water, and in the chronic stage is often all the better for a brisk scrub with spirit soap lotion. Another application which is of value in the active case is a paint consisting of equal parts of ichthyl and water. This has the disadvantage of disfiguring the face temporarily with dark blackish-brown patches, and for that reason some patients object. But the colour may be modified by sprinkling over the painted surface just before it dries some inert dusting powder, such as Fuller's earth. The ichthyl acts in two ways. It has the power of constricting capillaries, and as the varnish dries on there is a mechanical pressure or constriction applied which acts as a splint to the inflamed part.

Above all, one should be very chary of applying any greasy ointment to an acute patch of *L. erythematosus*. Ointments frequently, in this stage, make things worse.

When the acute process has settled down and the disease has passed into a more or less chronic condition, other remedies may be applied. I have known good results follow the daily application of tincture of iodine, and I have found the inunction night and morning of a few drops of collosol iodine oil beneficial. I have had very good results from the use of pyrogallic acid in a paste. At first I begin with a paste containing 5 grs. of the acid to the ounce, increasing it later if need be to 10 grs.

R. Acidi Pyrogallici, grs. v.
 Pulv. Zinci Ox.
 Pulv. Amyli, āā ℥ii.
 Paraffini Mollis, ℥ss.
 M ft. pasta.

Sig. As directed.

The application is best made at night, and the patient should be instructed to rub the paste in firmly but gently, paying special attention to the edges of the lesions.

In the morning, after washing the face, the patient should rub in the following ointment :—

R. Acidi Salicylici, grs. xv.—grs. xx.
Lanolini, ℥i.
Paraffini Mollis, ad ℥i.

This helps in removing the pyrogallic paste, and at the same time does something to remove the pathological horn cells from the surface of the lesions. This combination of treatments, if persevered in for several weeks, as a rule leads to a progressive diminution in the activity of the disease, and I have known it bring about the total disappearance of many lesions, with a minimum of scarring. Glacial acetic acid, lactic acid in various dilutions, and carbolic acid are recommended by some dermatologists, but I do not place much reliance upon them.

The method of election for treating the chronic patch of Lupus erythematosus is the application of carbon dioxide "snow." The snow may be applied in either of two ways, *e.g.* in solid form or as the "acetone- or ether-snow" mixture.

I prefer the former. A cone of snow, cut and shaped as nearly as possible to the shape of the lesion to be treated, should be applied with firm pressure for a period of twenty seconds to the patch to be dealt with. Twenty seconds is a fair average time. Experience in judging the amount of infiltration guides one in making a shorter or longer application. But when in doubt it is better to make an application too short than too long. A prolonged application may lead to more scarring than one likes, while a too short application may be corrected by a subsequent application. It is never necessary to make an application so prolonged as one requires to make in dealing with a *nævus*, where deep penetration is required. The freezing, which should be followed by the application of calamine lotion, gives rise to the formation of blisters. These may be dressed with lint smeared with a thin boric ointment. In my experience it is best to allow the blisters to rupture spontaneously, which they generally do in a few days. Once rupture has occurred and the blister shows signs of separating, it may be removed mechanically. The resulting raw surface should be dressed with a mild antiseptic ointment, and healing rapidly ensues. If the treatment has been successful, at the end of three weeks the site of the lesion is covered by thin, elastic, bluish-white skin with no trace of the disease. If care has been employed in the application, and it has not been too prolonged, the resulting cosmetic effect is excellent. Where the lesions are few it may be possible to treat them all at one time ; but where they are many and extensive it is much better to treat them at several successive sittings. Where a lesion is of some size, and it is impossible to make a cone of snow sufficiently large to cover it,

it is best to make several applications at the same sitting, beginning at the periphery and applying the cone of snow successively over the whole area. Care should be taken to reduce overlapping of areas of application to a minimum, otherwise some parts of the area will receive more severe treatment than is necessary. Some dermatologists prefer the "acetone- or ether-snow" mixture. This is best applied on a pledget of absorbent cotton-wool held between the teeth of a pair of artery forceps. Care must be taken that the mixture is not too thin. It should be of the consistency of the "slush" of melting snow in the streets. The mixture is painted over the surface several times at a sitting, with fairly firm pressure. In my opinion the pressure is an essential requirement for satisfactory penetration, and pressure can be much more satisfactorily exerted by means of a suitable cone of solid "snow." An acetone or ether freezing mixture may produce blistering, but more often it converts the epidermis into a leathery dry covering which peels off gradually.

X-rays, ionisation with copper or zinc, ultra-violet rays, high-frequency applications in the form of fulguration, linear scarification, and the application of the galvano-cautery have all been employed. But nowadays the consensus of opinion is that carbon dioxide snow properly used in suitable cases gives indubitably the best results.

It is advisable always to caution a patient that the disease is liable to recur. It is possible to cure the immediate attack; and now that its relationship to septic foci is established, it may be possible, by dealing with them, to prevent recurrence.

Erythema Pernio (Chilblain)

This is a localised variety of Erythema depending partly upon external and partly upon internal causes.

H. W. Barber* has given a very penetrating and accurate description of the two types of patient particularly liable to chilblains. Both suffer from acrocyanosis (the "chilblain circulation"). There is the fat, phlegmatic, somewhat obtuse girl or woman, with rough, dry skin on the back of the upper arms, and on the legs below the knees, with more or less cyanotic discoloration and coldness of the skin from the thighs downwards. There is also the thin, highly strung, nervous type, with considerable vaso-motor instability, and a tendency to coldness and blueness of the extremities. This type is very subject to catarrhs, and liable to develop tuberculosis. Given these predisposing factors, chilblains are easily produced.

The external cause is cold. The internal predisposing causes are defective peripheral circulation, with increased vulnerability, increased permeability of the vessel wall, and diminished coagulability of the blood.

* *Lancet*, December 4th, 1926, p. 1180.

The increased vulnerability and permeability of the vessel wall may possibly depend on focal sepsis, *e.g.* in the bowel. Some believe that chilblains depend upon a tubercular focus, and in certain cases this is true.

Symptoms and Course.—The condition is met with most commonly in children, though it frequently affects adults. It is a disease of the winter season. It affects chiefly the extremities: the toes, heels, fingers, the ears, and the tip of the nose. The lesions are red and swollen, for the condition is essentially one of exudative erythema. In shape they are round or oval, and they vary in size according to the severity of the case. The subjective symptoms are often very distressing, and consist of intense itching and burning more marked when there is a sudden change from a cold to a hot atmosphere, as when a patient comes from out of doors into an overheated room. Sometimes, especially in poorly nourished and ill-clad children, the damage to the capillaries and the consequent exudation may be so severe that bullæ form over the lesions. Or the lesions, especially on the fingers, may become fissured and cracked, or may even undergo a central necrotic ulceration. The mild cases terminate spontaneously on the approach of warmer weather, a slight desquamation occurring at the site of the lesions. In weakly subjects, with poor circulation, the condition may become chronic, disappearing for only a short period at the height of summer, and recurring as soon as the colder weather returns.

Most children subject to chilblains develop a crop of them every year until puberty.

Differential Diagnosis.—Chilblains require to be distinguished from *Lupus erythematosus* occurring on the extremities. Sometimes the differential diagnosis is difficult. Points of difference are the presence of the characteristic scales, and atrophic scarring without ulceration in the latter disease, and its persistence through the warm weather, with, possibly, its appearance in characteristic form on a site of election like the face.

Prognosis.—The prognosis with regard to an attack is good; but there is a tendency to seasonal recurrences.

Treatment.—It cannot be too strongly insisted upon that the best treatment of chilblains is prevention. With this object in view a child who has had an attack of any severity one winter should be well prepared to withstand a possible recurrence before the next winter begins. Cardiac and kidney lesions should be sought for and dealt with. The system should be built up by means of cod-liver oil, malt extract, quinine and iron tonics, etc. The peripheral circulation should be improved by exercise—*e.g.* skipping. In summer a course of sea-bathing often does good—if the constriction of the peripheral vessels induced by the cold is converted into an active dilatation by brisk exercise—*e.g.* running

barefoot along the sand. This alternate constriction and dilatation of capillaries amounts to a kind of vaso-motor gymnastic, which improves the tone of the vulnerable peripheral vessels.

Sun-baths are also excellent preventives of chilblains. Where real sunlight is unavailable, artificial sunlight may be employed.

In early autumn a course of treatment with glandular extracts should be instituted. I prefer a polyglandular preparation such as Hormotone tablets—one tablet (or more according to the age of the child) being given every night for three or four nights a week, or with a view to mobilising all the available calcium, $\frac{1}{10}$ grain of parathyroid substance daily. As soon as the colder season begins, warmer clothing should be put on. It is very essential that the trunk should be well clad—with lightly fitting, well-ventilated clothing. Stockings should be of wool. No garters or any form of suspender which interferes with the return circulation should be worn. In the open air the hands should, in cold weather, always be covered with gloves. From late autumn onwards a bath of salt water, with the chill taken off, should be taken every night. The feet should be dried with great care, and rubbed vigorously with a rough towel to promote the circulation. Hot-water bottles in bed, and the habit of toasting the feet before retiring before the fire, are anathema. Strong heat is capable of producing precisely the same pathological lesions as great cold.

The boots should be warm, fairly heavy, and always roomy. Boys should be warned particularly against tying their laces tightly about their ankles. Kid gloves must not constrict the wrists. Digestive troubles should be attended to and constipation must be avoided.

A susceptible child should be warned of the necessity of avoiding cold, and should not be allowed to wash in cold water once the winter begins. Drying should always be thorough.

If, in spite of these precautions, chilblains occur, the best internal remedy is calcium lactate in doses of 5-15 grs. thrice daily. This may be combined with small doses of parathyroid—*e.g.* $\frac{1}{40}$ grain thrice daily. Barber states that he has found a combination of treatment with iodine and thyroid very useful in the fat, phlegmatic type of patient. He pushes thyroid to the optimum dose, and gives increasing quantities of Tinct. Iodi. (French Codex, 1908), beginning with five drops twice a day, and progressing to sixty drops, divided over two or three doses, in milk per diem.

Nott's treatment, consisting in washing out the bowel daily with weak permanganate of potash solution, and simultaneously administering one grain of thyroid per day, gives good results in some cases. If preferred, and particularly if there is no constipation, the permanganate may be taken in a capsule along with the thyroid by the mouth.

Many local applications have been recommended. Of these iodine is probably the best. I prefer inunction of collosol iodine oil, but iodox or tincture of iodine also gives excellent results. Camphorated oil, or menthol in oil, often relieves the intolerable itching. Ichthyol in a paint or as an ointment may also be used with advantage.

Ulcerated chilblains may be treated with a mildly stimulating ointment consisting of equal parts of soft paraffin and boric ointment, to which may be added grs. v. of Ichthyol or $\frac{3}{4}$ of Balsam of Peru, or min. x. of Friar's Balsam, or 1 gr. of scarlet red to the ounce. Chilblains at all stages are greatly benefited by ultra-violet light treatment.

Scarlatiniform erythema

This is a rare disease possessing many features of close resemblance to with the eruption of scarlet fever.

There is little doubt that under this title a number of diseases etiologically quite distinct have been confused.

Etiology.—The precise cause is unknown. There is no constant factor discoverable. Probably there is some underlying predisposition or some abnormal condition of what Grindrod has called "ready sensitisation." It is frequently associated with rheumatic symptoms, *e.g.* articular pain, endocardial lesions, etc. It has been attributed to the action of cold, or to the sudden chilling of extensive areas of the skin. In the light of modern knowledge I think we are justified in attributing it to some focal infection or to sensitisation to some foreign protein. I have known a very severe attack follow upon the consumption of a pork pie.

Symptoms and Course.—There are occasionally prodromal symptoms, malaise, transient rise of temperature sometimes as high as 104° —though the temperature may remain normal—headache and occasionally nausea and actual vomiting. The prodromal symptoms last for 24–48 hours, and as a rule before they subside the eruption breaks out, at first usually on the trunk, in the groins, or on the lower limbs. It does not usually begin upon the face. It consists of diffuse red patches which spread and coalesce until in a well-marked case the whole of the integument, including that of the face, is affected. Sometimes the eruption is less extensive, and does not involve the whole skin. There may be miliary vesicles formed by localised elevations of the epidermis by the exudation of serum. These ultimately dry up without rupturing and "weeping." Punctate petechiæ have been met with.

There may be—though this is a rare symptom—enlargement of cervical lymphatic glands. As a rule the mucous membranes escape,

though the pharyngeal, tonsillar, buccal, nasal, and conjunctival mucous membranes may be slightly reddened. But as a rule the involvement of the mucosa is much less marked than in a case of true scarlet fever.

The tongue is never of the true strawberry type, though it may be reddened, and may desquamate.

The erythema lasts from one day to a week. Desquamation begins very early, usually on the second or third day, and before the erythema has subsided. This is a strong point of differentiation between this condition and true scarlatina, in which desquamation, as a rule, does not set in until after the second week.

Desquamation is usually rapid, being over in two to three weeks. It is generally complete—and the hair and nails have been known to fall. The eruption may be accompanied by considerable itching. The disease tends not only to relapse, but also to recur. Fresh recrudescences may occur before desquamation is complete, and there may be frequent recurrences spread over months or years. This suggests that a likely cause is sensitisation to some alien protein, the ingestion of which from time to time gives rise to a recurrence. A seasonal element has been observed in some recurring cases. The attacks vary greatly in intensity, and, in some, desquamation is so slight as to escape notice.

The prognosis is favourable as to life.

The disease is neither infectious nor contagious.

Complications.—Albuminuria is almost always absent. It occurs so rarely that when it is met with, unless there is strong evidence to the contrary, one may be justified in concluding that it was a pre-existing and independent phenomenon.

Pains in the joints and back are frequently associated symptoms. Pulmonary and cardiac affections may be incidentally met with. Proof is lacking that there is any causal relationship.

As it is always a matter of importance to distinguish between this disease and scarlet fever, the following tabular summary of differences may be of use :—

	Erythema scarlatiniforme.	Scarlatina.
Infectivity.	Neither contagious nor infectious. Occurs in sporadic cases.	Is contagious and infectious. Usually several cases in same neighbourhood.
Eruption.	May begin anywhere, usually on trunk No circum-oral pallor.	Begins on face. Circum-oral pallor very characteristic.
Mucous membranes.	Mildly affected.	May be severely affected.

Erythema scarlatiniforme.

Scarlatina.

Tongue.	Strawberry tongue not found.	Strawberry tongue constant.
Temperature.	Slight elevation.	Elevation usually considerable.
Pulse-rate.	Quickened, but never disproportionately high to temperature.	Rate disproportionately high to temperature, especially in children.
Desquamation.	May be absent ; but if it occurs begins early 2nd-4th day.	Occurs invariably. Is delayed till 2nd-3rd week.
Albuminuria.	Rarely if ever present. If present is probably independent.	Fairly frequent.
Recurrence.	Eruption tends to recrudescence, and disease tends to recur. The same person may have many attacks.	Eruption does not recrudescence in the course of an attack. One attack confers considerable immunity. A second attack may occur, but this is rare.
Course.	Benign. Fatal issue extremely rare, and then due to complications.	May end fatally.

Treatment.—Rest in bed till all prodromal symptoms have disappeared. As local treatment a dusting powder of starch and talc, or a calamine lotion may be found useful. When desquamation sets in, an ointment such as Ung. Acidi Salicylici may be employed. A word of caution may here be entered. From time to time one sees a child at home or at a preparatory school suffering from an eruption and a symptom-complex which make it a matter of extreme difficulty to decide whether the condition is Erythema scarlatiniforme or scarlatina. In such a case it is advisable to play for safety, and after explaining the difficulty to the child's parents, or to the headmaster or mistress of the school, one should insist upon strict isolation of the patient until the diagnosis can be definitely cleared up.

Erythema morbilliforme probably depends on causes similar to those which produce Erythema scarlatiniforme. The erythema resembles the eruption of measles, but is not accompanied by the catarrhal symptoms of measles.

PELLAGRA

Pellagra is included here because its earliest symptom is usually an erythema.

Definition.—A systemic disease in which the skin, the gastro-intestinal

and sometimes nervous system are affected. The cutaneous symptoms are erythematous patches, which later become pigmented and scaly.

Etiology.—This is a matter still under dispute. It has been attributed to eating decomposing or fermented maize, but it occurs among people who do not eat maize, and some years ago there were several cases in an English lunatic asylum where the patients were on an ordinary diet. Insane persons would seem to be specially susceptible. A protozoal cause has been suggested, but this has not been proved. It is most likely that a diet insufficient in proteid content and vitamins may be the cause.

Symptoms.—The skin lesions appear usually first on the back of the hands, wrists, or forearms; the face, neck, and scalp; the feet and ankles. They look at first like the erythema of sunburn, and consist of reddish, symmetrically distributed patches, which coalesce, and as the redness subsides become scaly and rough and somewhat pigmented.

The gastro-intestinal symptoms are as follows: the tongue is swollen, dry, and its surface epithelium is often shed, leading to greater smoothness and a more vivid red colour. There may be diarrhoea, the stools containing mucus and undigested food debris, and smelling foully; or there may be constipation. The patient is usually weak and ill, and emaciates rapidly. Mental symptoms usually develop in the later stages of the disease, taking the form of dullness and apathy, and sometimes coma.

The prognosis is bad, about 50 per cent. of all cases dying.

Treatment.—Arsenic in various forms and quinine have been recommended, and have yielded good results, salvarsan preparations particularly. But the best results are secured if the patient's conditions of life can be improved. Nutritious but light food, ample in proteids and vitamins, must be given. The skin lesions may be treated with oily calamine lotion with a small percentage of ichthyol.

PINK DISEASE

(Erythrœdema; Erythrœdema Polyneuritis; Acrodynia)

This disease appears to be becoming more frequent, and as its earliest symptoms are associated with a skin eruption, a short note of its characteristics seems desirable. It is met with in young children from 1-3 years old. After prodromal symptoms, *e.g.* restlessness, fretfulness, loss of appetite, and wakefulness, a miliary rash breaks out round the sweat pores, and soon afterwards the hands, feet, and sometimes the cheeks and nose, take on a characteristic pink and swollen appearance. Later this pink hue gives place to a deeper and more livid colouration, suggesting chilblains. There is considerable itching or burning in the swollen, reddened parts, and the child may scratch or bite at them. There is often photophobia, and always great loss of muscle tone, with wasting of muscles and sometimes paresis. Sometimes there is a polyneuritis. The hair becomes dry: ulcers may appear in the mouth: the pulse is quickened: the blood pressure high.

The cause of the disease is unknown. Probably it is infective. Various organisms have been found, but their causal relationship has not been established. I incline to the opinion that a filter-passing virus may be the cause.

The progress is good, though recovery is very slow. A number of fatal cases have occurred.

Treatment is by dusting powders, soothing, antipruritic ointments, and by the internal administration of Calcium Lactate. Artificial sunlight has been tried with good results.

ERYTHEMATA DUE TO EXTERNAL IRRITANTS

Erythema ab igne

Erythema ab igne is commonly met with on the anterior aspect of the legs of women who are addicted to the habit of sitting before the fire with their feet on the fender and their skirts slightly raised. This sets up an erythema of varying degree, which may be followed, if the habit is persisted in, by the appearance of a mottled reticular brown pigmentation. Glass-blowers, blacksmiths, iron-workers, and stokers also suffer from **erythema ab igne**, in consequence of their work. It affects the exposed parts of the body—the face, arms, and front of the chest, and if the heat has been very great or the exposure prolonged, is accompanied by swelling and smarting of the skin. As the erythema subsides there is some desquamation. In chronic cases the skin of the affected parts assumes a thickened, reddish-brown appearance.

Erythema solare, which is due to the actinic rays of the sun (the violet and ultra-violet rays), is met with in most persons exposed to the direct action of the sun's rays without any protection. The objective phenomena are redness with occasional blistering. Some people are particularly susceptible to the action of the rays of the sun, and develop an erythema on the exposed parts—the face, ears, the back of the hands, and the uncovered portions of the arms. On this erythema papules and tiny vesicles may develop (*Hydroa aestivale*). Exposure to the X-rays or to the ultra-violet rays of the Finsen lamp may also produce an erythema (see p. 275).

Two other varieties of erythema depending upon external irritations should be mentioned: (1) *Erythema infantum*, (2) *Erythema intertrigo*.

Erythema infantum

Just as a patient confined to bed for a prolonged period is more apt to develop bed-sores if the skin becomes irritated by urine or fæces, so an infant, either through special vulnerability of the skin, or through neglect upon the part of its mother or nurse to change its napkins sufficiently often, may develop an erythema on the buttocks and thighs. When a child's diet contains too much fat it is liable to diarrhœa, with yellow-coloured stools containing large quantities of fatty acids which are very irritating to the skin. Excess of sugar gives normal-coloured stools, which may, however, be highly acid and irritating, and capable of starting an erythema. The eruption, which is at first confined to the napkin area, though it may later spread to the legs and feet, is at first a bright red. Very frequently tiny fissures or excoriations develop, and these permit the entrance of micro-organisms which bring about the development of further lesions. Vesicles may form, which rupture, leaving exposed reddish-brown papules, especially

upon the buttocks along each margin of the inter-natal clefts. These lesions often suggest congenital syphilis, but are differentiated from that disease by the absence of all other evidence of congenital lues and the rapidity with which they heal up under simple treatment.

The treatment should be directed to ensuring that the napkins are changed as soon as they are soiled, and that the buttocks are thoroughly dried and adequately powdered with an inert powder. The napkins should not be washed in soda, or in any disinfectant soap. Any error in diet should be corrected.

Calamine lotion is in most cases a sufficient curative agent, and it is frequently advisable to administer small doses of citrate of potash or soda to render the urine alkaline. In a very fat child care should be taken that the natural furrows in the thighs are well dried and dusted with powder.

Erythema intertrigo

In obese persons the retention of natural secretions and the microbic growth that readily occurs in them between two skin surfaces in contact, *e.g.* below the breasts, between the buttocks, between the pendulous abdomen and the thighs, etc., give rise to Erythema intertrigo. This distressing condition may be greatly aggravated by intercurrent maladies such as diabetes. Frequently the erythematous skin becomes cracked and fissured. The fissures may be treated by the application of a 1 per cent. silver nitrate solution, followed by a dusting powder, or by brushing them over with methylated spirits and drenching them with dusting powder. The best treatment for this form of intertrigo is prevention by scrupulous cleanliness, the use of a dusting powder after washing, and the separation of the skin surfaces by thin muslin.

When it has developed, the erythema may be treated with calamine lotion and ichthyol (grs. ii.— $\bar{3}$ i.), fissures being dealt with on the lines already indicated.

CHAPTER XI

URTICARIA AND SOME ALLIED CONDITIONS

THE relationship existing between auto-intoxication from the gastro-intestinal tract and generalised urticaria has long been recognised. Recent work on sensitisation by foreign proteins (see p. 202) has brought new light to bear upon the matter.

Definition.—Urticaria is an angio-neurotic affection of the skin characterised by the sudden appearance after a transient erythema of raised whitish œdematous lesions, surrounded by a reddish halo, which itch intensely, and subside after a variable time. The generalised variety may be regarded as an anaphylactic phenomenon.

Etiology.—Urticaria may be local or general. Local urticarias are due to external irritants, such as nettle-stings, wasp-stings, bug-bites, etc.

Generalised urticaria is due to some toxic substance—most often an alien protein—circulating in the blood stream and affecting the skin capillaries and their vaso-motor nerves. As the toxic substance is in the general circulation the whole integument is under its morbid influence, and is in a potential condition to react in wheals. For this reason it is possible to produce wheals on any part of the skin by scratching it with a blunt instrument like a pen-holder. The whole skin is sensitised by the toxin, and any local irritation will cause it to respond with a wheal.

The chief sources of the toxins are—

1. **Foods.**—Any food may cause the disease, either because it is already tainted, or because in process of digestion some incompletely hydrolysed product capable of producing toxic symptoms in the particular individual reaches the circulation from the alimentary tract. Among ordinary foods those most likely to produce urticaria are shell-fish, eggs, game, pork, sausages, cheese, and strawberries. These and other foods may be (*a*) toxic through decomposition; (*b*) toxic to the individual through personal idiosyncrasy, for “one man’s meat is another’s poison”; (*c*) rendered toxic through faulty digestive processes;

or (*d*) the source of toxic mischief, because, through increased permeability of the intestinal mucosa, they reach the circulation before their digestion is complete.

2. Drugs : especially sera. A serum rash is essentially an urticaria. But certain drugs, especially the balsam of copaiba, sandalwood oil, quinine, antipyrin, and the salicylates, may give rise to urticaria.

3. Diseases affecting chiefly the organs of metabolism and elimination—diseases of the liver, kidneys, and diseases due to animal parasites, *e.g.* intestinal worms may produce urticaria.

In very intractable cases, if no other cause can be discovered it is possible that urticaria may depend on some hyper-sensibility of the vaso-motor nerves, produced by some cause (possibly psychic) operating through the central nervous system. Sometimes, possibly, this central disturbance may depend upon some lack of equilibrium between the endocrinous secretions.

Histo-pathology.—Sections through a wheal show a serous engorgement of the stratum Malpighii and the papillæ, with dilatation of the capillaries and enlargement of the lymph-spaces in the corium and papillæ.

Symptoms.—With or without known dietary indiscretion and sometimes preceded by vomiting, diarrhœa, or sometimes constipation there is a sudden itching of the skin, with the appearance, usually at points where the clothing presses, or where the fingers can readily scratch, of oval, round, linear or multiform wheals of varying size (Plate XV). Preceded by a transient erythema, the wheals are pale in colour, and are elevated above the surface of the skin, and surrounded by a marginal zone, which is sometimes vivid red, sometimes rose-pink. The eruption itches intensely and often burns. The lesions are velvety to the touch, transient, and vary in extent and situation from hour to hour, subsiding without leaving any scar. Spreading peripherally the lesions may form gyrate or geographical figures (*Urticaria gyrata*, *Urticaria geographica*).

Sometimes tiny hæmorrhages occur in the centre of a wheal (*U. hæmorrhagica*), and when such lesions subside a macule of brown pigment remains. Sometimes the exudation is so great that the wheals are capped by vesicles or bullæ (*U. vesiculosa*, *U. bullosa*).

Urticarial wheals may appear on any part of the skin and affect also the mucous membranes of the lips, mouth, pharynx, and larynx, producing dyspnœa and difficulty in swallowing.

This complication is not infrequent in what is known as

ANGIO-NEUROTIC ŒDEMA OR QUINCKE'S ŒDEMA

This is nothing more than a giant form of urticaria met with particularly in highly strung nervous women. It tends to run in families, and probably

PLATE XV



ACUTE URTICARIA with well-marked DERMOGRAPHISM

psychic factors play a part in its etiology. The chief situations for its wheals are the lips, cheeks, eyelids, skin of the extremities, and the mucous membranes. The wheals are large, appear and vanish suddenly, and are not so definitely margined as the lesions of ordinary urticaria. The condition may continue to recur for years.

Course.—An acute attack of urticaria usually lasts for several days. The individual lesions are transient, but the urticarial condition persists, with gradually diminishing intensity, for 3–7 days. At the end of that time the skin has assumed its normal appearance, though it is still, as a rule, hypersensitive to external stimuli. Some patients have a single acute attack of urticaria, through some error in diet, and are never troubled again. Others, once an attack has occurred, are subject to recurrences for months, years, or even the whole of their lives. Such patients have become very highly sensitised to some foreign protein, either ingested or absorbed from some septic focus, and exhibit anaphylactic shock, in the form of an urticarial eruption, whenever they partake of the article of diet, or absorb some more of the toxin which first sensitised them. They suffer from *chronic* urticaria.

Some individuals would seem to be born already sensitised to certain proteins (Schloss). Others become sensitised in ways not yet fully understood. For instance, a man may partake of lobster or other shellfish many times without ill effect; then, for some reason (faulty metabolism possibly), he develops an attack of urticaria after partaking of these articles, and ever afterwards he may remain liable to an outbreak if he consumes any of that food again.

Diagnosis.—This is usually easy, as no other disease presents the same clinical picture.

Prognosis.—In acute cases the prognosis as to the immediate attack is good; but one cannot promise that the first attack will be the last. In cases with a history of recurring attacks, modern methods of investigation as to the underlying cause have improved the prognosis. If a definite cause can be traced and removed, complete recovery may be expected.

Treatment.—Rational treatment must depend on the discovery of the etiological factor. Find the cause—and eliminate it. This is comparatively easy in most acute cases, but in the chronic relapsing case it may be very difficult.

For purposes of convenience we shall deal first with the treatment of an acute attack. As the attack is usually traceable to some dietary indiscretion, it is well to begin by cleansing the *primæ viæ*. The patient should receive a brisk purge—either a saline purgative or $\frac{1}{10}$ gr. of calomel every half-hour, followed after five doses by a couple of drachms of sulphate of magnesia. The patient should remain in bed, wearing cotton or silk next his skin, and his bed clothes should be light and non-

irritating. His diet should be confined to milk, unless milk is a suspected cause of his condition. He may be given a luke-warm bath of bran or soda* daily or twice a day. On coming out of the bath he must not rub himself with a towel, but dab the skin gently with soft handkerchiefs to secure dryness without exciting irritation. The whole body may then be dusted over with a dusting powder containing camphor grs. xx., starch powder and Venetian talc, of each half an ounce. Or he may apply *Lotio Calaminæ oleosa*, to which has been added 2 per cent. of phenol, 2 per cent. of *Liquor Carbonis detergens* or 2 per cent. of ichthyol. Internally, salicylate of soda, antipyrin, the bromides, atropin, and even opium may be given. On account of the diminished coagulability of the blood in urticaria, calcium lactate or calcium chloride may be administered in doses of 15 grains thrice daily, or, with a view to mobilising the available calcium, parathyroid substance in doses of $\frac{1}{10}$ grain night and morning. Sometimes an acute attack may be brought under control by the hypodermic injection of 5 minims of 1-1000 adrenalin solution night and morning for a few days. In very severe and intractable acute cases venesection with the withdrawal of 10-12 ounces of blood, with or without transfusion of saline, will often do good.

In the chronic recurring variety, the local treatment of each recrudescence is the same as in the acute variety. But diligent search must be made for the underlying cause. All possible sources of focal sepsis must be sought for, in teeth, tonsils, stomach, bowel, etc., and the patient should be tested with the protein tests to discover if some food factor is responsible.

If a patient reacts positively to any of the protein tests, one may make a dietetic test by feeding him upon the article from which the protein is derived—*e.g.* if he reacts to egg-white, let him swallow a quantity of fresh or boiled egg-white. If this is followed by an attack of urticaria, provided no other food has been administered, we may conclude that this particular article of diet is one cause, possibly the sole cause, of his urticaria. He must therefore avoid it, and any other protein to which he reacts positively, in future; or he may be desensitised or immunised against this food by inoculation with a very dilute dose of the special protein.

Or an attempt may be made to desensitise him by administering peptone before every meal (*vide* p. 206).

In chronic cases, in which the cause has eluded discovery, it is sound practice to administer intestinal antiseptics, or to try the effect of butter-milk or lactic acid bacilli.

Of intestinal antiseptics the best are sulpho-carbolate of soda, salol, kerol (in capsules), or that non-absorbable, non-toxic benzene

* See Appendix.

derivative marketed under the trade name of Dimol (1 grain thrice daily).

Dermographism : Urticaria factitia

When a patient is suffering from an acute attack of urticaria, his whole integument, except the skin of the soles and palms, will respond with an urticarial reaction to any external stimulus, and if patterns or lines be drawn upon the skin with the blunt end of a penholder, urticarial wheals corresponding to these patterns will appear (Plate XV). The tendency to react in this way may last for some time after the acute attack of urticaria has subsided.

Some individuals, who may never have had an attack of ordinary urticaria in their lives, present this peculiar power of response to external stimuli. They may be of an hysterical temperament, or sometimes they are epileptics or alcoholics; or, on the other hand, they may present no evidence of a nervous diathesis, except this condition of peripheral vaso-motor instability. Three factors are necessary for the appearance of the phenomenon: (1) vaso-motor instability of sympathetic origin, (2) vigorous external stimulation, (3) an intact local circulation. It is interesting to know that any interference with the local circulation, *e.g.* by the application of a tourniquet diminishes or may suppress the phenomenon.

On writing or drawing a pattern with a blunt instrument on such a person's skin there is, first, a variable period during which the parts thus treated appear blanched. Then the pattern begins to appear in urticarial wheals, standing out above the level of the skin and surrounded by a rosy blush. The wheals itch, but the unstimulated skin of the person who exhibits dermographism does not itch. The lesions thus provoked disappear gradually, leaving no trace.

True dermographism persists all through life, and is not amenable to treatment, though hormone therapy with supra-renal extract or post-pituitary extract may be tried.

Urticaria pigmentosa

This rare disease is linked up with the urticarias because of the intense itching, with the formation of wheals, which characterises it. Histologically it is found to have little if any relationship with urticaria, partaking more of the nature of a benign neoplasm. It has been met with in association with an enlarged thymus.

It is usually met with in otherwise healthy children, and begins in the early months of life, and may persist up to the tenth year or longer.

It is characterised by the periodic outbreak of wheals, which usually appear first on the chest wall, though they may affect any part of the skin. The face and hands are rarely affected. When the wheals subside

they leave definitely margined yellow, fawn-coloured, or dirty-brown deposits of pigment, which are sometimes palpable.

In the absence of recent wheals these pigmentary deposits may present difficulties in diagnosis, but a clue to the true nature of the condition is supplied by the fact that the skin round and over these deposits reacts with a wheal if it is rubbed.

Periodic recrudescences of the disease are more common in warm than in cold weather, and old lesions participate in the recrudescence, becoming definitely urticarial again.

After a few years recrudescences affect only the old lesions, no new ones developing.

In time the disease tends to undergo spontaneous cure. The precise cause is unknown. Possibly the condition depends upon some of the factors responsible for ordinary urticaria.

Histologically the pigmentary deposits are seen to consist of tumour-like masses of mast-cells held together by a reticulum of connective tissue.

Treatment.—No treatment seems to be able to prevent recurrence. The acute symptoms may be dealt with in the same way as ordinary urticaria.

Urticaria papulosa : lichen urticatus

This disease of children, which is also known as *strophulus*, *gum rash*, or *simple prurigo*, is usually met with in infants or young children.

Signs and Symptoms.—The lesions are met with on the trunk, and particularly the outer aspect of the legs and buttocks, and consist of small circumscribed red wheals, which, on palpation, are found to be infiltrated and somewhat shotty. The lesion is definitely papular, the wheal often disguising the papule. Sometimes the papules may be capped by a vesicle. Fresh papules appear in crops, usually during the night, and the itching is so intense that the child becomes fretful and often loses its sleep. The tops of the papules may be torn by scratching.

Jonathan Hutchinson was of opinion that fleas had something to do with the appearance of the lesions, and it may be that the flea-bite acting on a skin sensitised by faulty alimentary metabolism is the determining cause. The disease, which in my experience is particularly common among Jewish children, is usually associated with constipation, and is prone to relapse. It may persist for some years.

Diagnosis.—It may be confused with scabies, but if an infant in a household suffers from scabies some other member of the family is almost certain to suffer; and in scabies in infants one finds, usually, pustules on the hands or feet, and the evidences of burrows at the sites of election.

Treatment.—Inquire judiciously into the possibility of infestation with fleas.

General treatment. A non-irritating diet—preferably milk—should be given, and the bowels should be kept loose either with grey powder or Carbonate of Magnesia.

Locally, a cyllin bath— \bar{z} i in three gallons of water—should be given every night, and the following ointment, which will be found to give great relief, should be applied night and morning :—

R. Camphor, grs. xv.
 Spirit. Vini, q.s.
 Ung. Sulphuris.
 Ung. Zinci Ox., āā p.e. ad \bar{z} i.
 M.

Urticaria papulosa is believed to constitute a link between Urticaria and Prurigo.

Prurigo (Hebra's prurigo).

Definition.—Prurigo is a chronic itching disease of the skin which begins usually in infancy, sometimes in late childhood, and rarely in adult life. It tends to persist indefinitely, running a typical course.

Etiology.—The etiology is obscure. Hebra believed it to be most common in the children of tubercular parents, but there is no recognisable relationship between the clinical appearances of prurigo and tuberculosis. Heredity may play a part, for though direct heredity from parent to child is rare it is not uncommon to find several sufferers in a group of relations. The sufferers are usually ill-nourished and under-developed, and in many cases it is possible to get a history of indigestion and gastro-intestinal disturbances in early life. Some believe that it is due to a sensitisation of the skin which renders it prone to react to external irritations.

This view brings it into etiological relationship with urticaria, and as its earliest symptoms are urticarial in character its classification in that group seems justified. We shall see later that prurigo is often associated with asthma and bronchitis, and in the light of modern opinion as to the connection between asthma and protein sensitisation we have presumptive reasons for suggesting that prurigo may depend upon a similar cause.

Symptoms and Course.—Usually the disease begins in the first year of life. The child is restless, irritable, and sleepless, and on examination one finds, particularly on the chest, abdomen, back, and extremities, a number of scratch marks, with urticarial lesions scattered about or grouped among them. The lesions recede, to recur again in the same urticarial form. When this prodromal stage of urticarial lesions has lasted for about six months, it will be observed that the

lesions have begun to concentrate upon the limbs, more particularly on the extensor aspects, the trunk becoming more and more free from them. A close examination will show that the urticarial lesions are characterised by the presence of small nodules (*prurigo papules*), often more palpable than visible. In these papules the itching seems to be concentrated, and the epidermis is abraded over them by scratching, so that a small blood crust may cap them.

With the development of the pruriginous papule the urticarial type of lesion begins to recede, and in subsequent recrudescences the papular element predominates.

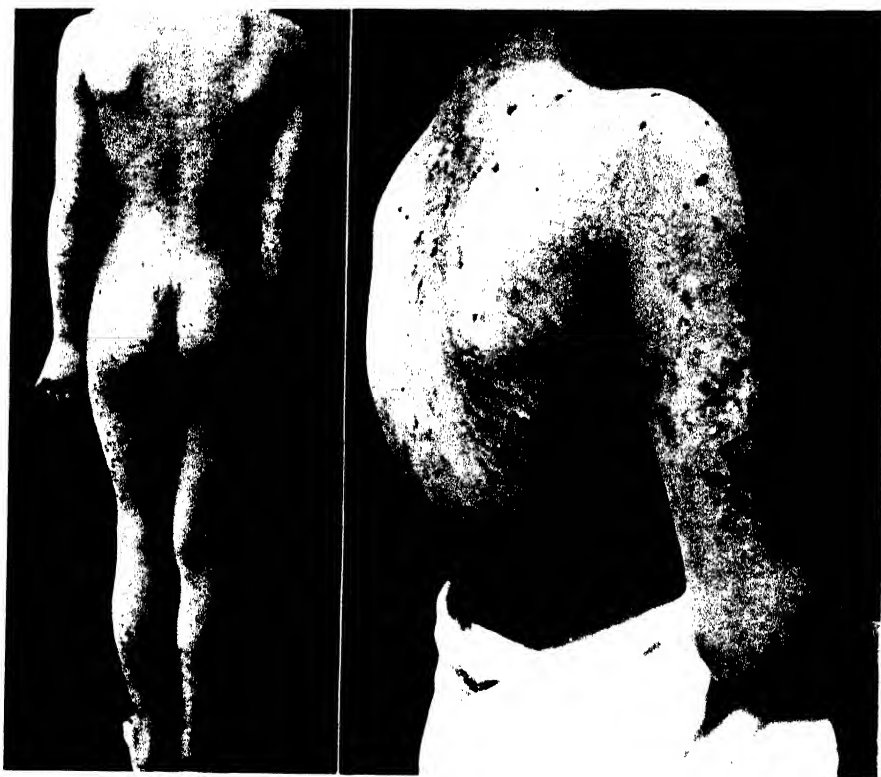
In the second year of the patient's life the disease has proclaimed its type as severe (*Prurigo ferox* (Plate XVI, B)), or mild (*Prurigo mitis* (Plate XVI, A)), and has now definitely shown its predilection for the extensor aspects of the limbs. The legs are usually more severely affected than the arms, and the distal parts of the limbs more than the proximal. After the extremities the parts most severely affected are the skin over the sacrum, the back, and the abdomen. Usually the face, hands and feet are spared.

The general integument is dry and coarse, perspiration is diminished—some sufferers hardly perspire at all—and the affected skin suggests on touch the hide of a pig. As in ichthyosis, however, the skin in the flexures of the joints remains unaffected in most cases, and the inner aspects of arms and thighs are usually spared.

Scratching confers upon the affected areas lesions of its own. The lanugo hairs are broken and coarsened, and the skin is studded over with tiny blood crusts. The chronic inflammation and the insults of scratching lead to the deposition of pigment, and in all cases which have persisted for any length of time the skin, especially on the lower extremities, is stained a dirty fawn or brown colour. Chronic infiltration so alters the skin that it can no longer be pinched up in delicate folds, but has to be lifted in masses. The skin tends more and more to resemble the hide of a pachyderm. Some of the natural folds in the skin are obliterated, some are exaggerated. The disease has periods of remission. In summer the condition improves, and, if the affection is of the mild type, may disappear temporarily. In the winter, when the sweat-glands are less active, the lesions are more severe and the itching more intense.

A characteristic feature of the disease is enlargement of the lymphatic glands, especially in the groins (*Prurigo buboes*) and armpits. This adenitis has been attributed to secondary infections through scratching, but if this is the sole cause it is remarkable that the enlarged lymphatic glands, which may reach a considerable size, are never painful, never suppurate, and are usually softer than ordinary inflamed glands. Possibly secondary infection may contribute something to the adenitis, but

PLATE XVI



(a) PRURIGO MITIS

PRURIGO FEROX

(b)

Note the torn papules and scab

probably the enlargement of the lymphatic glands is part of the symptom-complex of the disease.

The intense and constant itching associated with prurigo renders

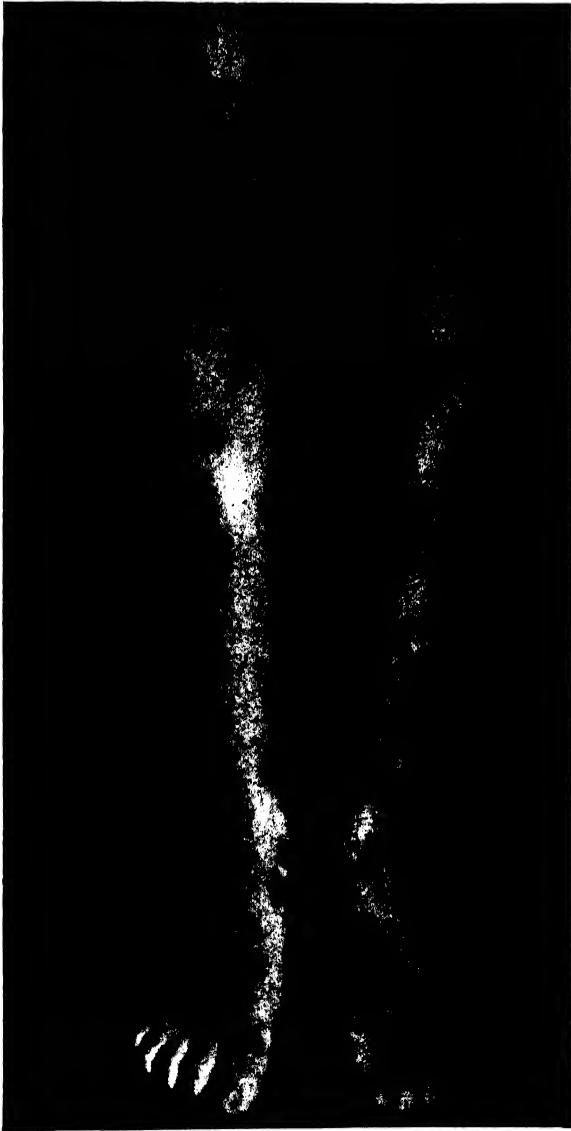


FIG. 73.—Prurigo ferox. Note large papules.

the sufferers irritable, nervous, and sleepless, and may lead to a deterioration in the general health which may predispose the patient to some fatal infection.

In a large proportion of all cases of chronic prurigo there is an intimate association with bronchial asthma, bronchitis, or bronchial catarrh. Many of the patients suffer alternately either from an exacerbation of their skin condition, or from an attack of asthma or bronchitis. When the skin is in full eruption the asthma is gone. When an asthmatic attack develops the skin clears up. These facts suggest an etiological relationship between asthma and prurigo, and both may depend upon sensitisation to some foreign protein. But this is not yet proved.

Histo-pathology.—The microscopical picture varies with the age of the lesion. In a recent prurigo papule there is dilatation of lymph vessels and serous infiltration of the papillæ and superficial layers of the corium. Later there is a marked degree of small-celled infiltration, particularly round the dilated capillaries in the papillæ, with deposit of pigment in the basal cells.

Diagnosis.—In a well-marked case the diagnosis is not difficult—the intense itching, the pachydermatous changes in the skin, the long history, and the enlarged glands, especially in the groins, all pointing strongly to prurigo. Difficulties may arise in the early stages, before the prodromal urticarial stage is past; or in the mid-course of the disease, when eczematous symptoms complicate it.

Prurigo may be confused with *chronic scabies*, but the long history and the absence of acarian burrows at the sites of election ought to clear the matter up. Sometimes, however, scabies and prurigo may coexist.

Prognosis.—The later a patient comes under treatment the less likelihood is there of a cure. If a sufferer comes under observation early in the course of the disease and is treated carefully the prognosis is favourable. In many cases the most one can promise is alleviation of symptoms. Many sufferers from prurigo die early from other maladies.

Treatment.—I believe that the early recognition of the disease, combined with a systematic and thorough search to determine whether it is due to sensitisation to foreign proteins or to absorption of toxins from some septic focus in the bowel or elsewhere, and the careful following up of a line of treatment based on one's findings, will in the future prevent many a patient from drifting into an incurable condition.

The life of a person suffering from prurigo should be regulated with care. The diet should be nourishing but easily digested. Milk, fresh fish, poultry, vegetables, and fruit should be allowed; but red meat only in moderation. Tea should be weak; coffee and alcohol are better forbidden. Smoking should be allowed only occasionally. A watch should be kept upon the diet to discover whether any particular article makes the itching worse. The bowels should be kept open regularly, by means of saline or other aperients. Cotton or silk should be worn next the skin, and, if need be, woollen garments on top of them. As the

skin is preternaturally dry, warm clothing tends to stimulate a grateful perspiration. For the same purpose an occasional Turkish or vapour bath is useful, and if the skin is very harsh and dry relief may be afforded by an injection of pilocarpin at intervals.

No internal medicine seems to be of much value, but glandular extracts, especially thyroid, may be tried, and intestinal antiseptics such as kerol, salol, or dimol may be administered. In cases associated with asthma peptone injections may be of service. Young sufferers should be given cod-liver oil and Syrup ferri phosph. co. (Parrish).

Great comfort is afforded by a daily hot bath, in which the patient may lie for an hour at a time. These baths may be rendered demulcent with bran, or sedative by tar preparations, *e.g.* \mathfrak{z} i. of Liquor carbonis detergens in every two gallons of water. Sulphur baths, prepared with Sulphaqua bath charges, are also useful. After a bath the skin should be dried gently, and smeared thoroughly with some mild ointment with a basis of animal fats—*e.g.* lard or lanolin or a combination of both. Antipruritic agents such as tar, camphor, or sulphur may be combined with these ointments, *e.g.*—

R. Liquor Carbonis Detergens, min. xv.	R. Camphor, grs. x.
Ichthyol, grs. x.	Spirit. Vini, q.s.
Lanolini, \mathfrak{z} ii.	or Sulph. Precip., grs. xv.
Adipis Benzoati, ad \mathfrak{z} i.	Glycerini Amyli, \mathfrak{z} ii.
M.	Adipis Benzoati, ad \mathfrak{z} i.
	M.

Oleum Rusci (min. x.— \mathfrak{z} i.) or β -Naphthol (grs. x.— \mathfrak{z} i.) may also be applied in ointment form.

Hebra suggested a somewhat heroic treatment with Vlemingk's solution. The affected parts are painted with the solution, which is allowed to dry on. The patient then lies in a warm bath for an hour, after which he may be rubbed with an ointment consisting of equal parts of Ungt. Sulphuris and Ungt. Acidi Salicylici. If, after a time, the treatment gives rise to irritation the application of Vlemingk's solution may be stopped, but the baths and ointment treatment, without the sulphur, may be continued.

If a case is complicated by Eczema one should aim at removing the eczematous symptoms before tackling the prurigo.

For children in the urticarial stage of the disease von Zumbusch suggests tannin baths prepared by boiling two hands-full of oak bark in two litres of water, straining the decoction and adding it to the bath.

In most cases of prurigo there is usually a marked improvement after a week or two of thorough treatment; but if the treatment be suspended the disease tends speedily to relapse. To ensure success

baths and ointments must be continued for a long time after all symptoms have disappeared.

Hebra, who was the first to give a clear description of prurigo, believed it to be a very serious disease, which usually ended in death. As met with in this country it is rarely fatal directly, and would not appear to be attended by the same severity of symptoms as characterised the cases originally described by him.

In the debatable land which lies between *urticaria papulosa* of infants and a typical case of *Hebra's chronic prurigo* many varieties of pruriginous papular diseases are to be found. Brocq's *prurigo simplex*—a disease of adults or adolescents—is one. Its chief feature is a scattered papular eruption which itches intensely, and which is found chiefly on the extensor aspect of the limbs. It is commonest in young women, and is not associated with that infiltration, lichenification and pigmentation of the skin characteristic of Hebra's prurigo. It runs a short course, and disappears without leaving scars, but it may return every summer for several years.

CHAPTER XII

TOXIC ERUPTIONS OF UNDETERMINED CAUSE DEPENDING PROBABLY UPON SYSTEMIC BACTERIAL INVASIONS, OR FOCAL SEPSIS

IN the past the term "pemphigus" has been applied somewhat loosely to a large number of skin affections characterised by the formation of bullæ. Now it is generally agreed to reserve the title for four varieties of bullous eruptions: (1) *Pemphigus acutus malignus*, (2) *pemphigus vulgaris*, (3) *pemphigus foliaceus*, and (4) *pemphigus vegetans*.

Pemphigus acutus malignus

This is a rare disease, acute in onset with elevation of temperature, and characterised by the appearance of bullæ of different sizes and irregular distribution.

Etiology.—The cause is unknown, but as a majority of cases



FIG. 74.—*Pemphigus acutus malignus*.

(See Fig. 75, same patient.)

occur in butchers or others who have to handle carcasses, it is probably due to septic infection. A diplococcus found by Bulloch in a case of Pernet's has been impugned. Bacteria have been found in the bullæ, but none of them have fulfilled Koch's postulates. In almost every case there is the history of a wound. This may have healed weeks

before the eruption appears: or it may still be present when the disease develops. Focal sepsis is therefore the probable cause.

Symptoms and Course.—After a short period of malaise and lassitude there is a rigor, and the temperature rises rapidly to 102° – 103° or over. With the rise of temperature patches of erythema appear, usually at points of friction from the clothing, or on opposed skin surfaces, or very commonly in the neighbourhood of the groins. On these erythematous patches blisters, which may assume considerable dimensions, rapidly develop. The blisters are filled with fluid, varying in colour from clear white of egg, through yellow, to dark red. In the latter case the fluid is hæmorrhagic. The bullæ are thin-walled and



FIG. 75.—*Pemphigus acutus malignus*. Following a wound with a meat-hook.

rupture quickly, leaving a raw, red, oozing surface (Fig. 75), which may crust over, and under the crust the epidermis may be restored. The fever subsides, but the temperature rises again before new bullæ appear. An attack lasts with intermissions for 14–21 days. The mucous membrane of the mouth and nasopharynx may be involved.

After the raw surfaces have healed there is often considerable pigmentation at their site.

Diagnosis.—Confusion may arise with *erythema multiforme* of the *bullous type*. But in *erythema multiforme* the general symptoms are not so severe; the eruption is differently distributed, and its type varies from place to place on the skin surface. Widely distributed *impetigo contagiosa* may be confused with *Pemphigus acutus*; but in

Impetigo contagiosa there is no disturbance of the general health ; the bullæ do not usually attain such dimensions as those of *P. acutus*, and their contents dry into a characteristic " gummy crust." It is possible that so-called epidemics of *Pemphigus acutus*, which have occurred from time to time in institutions, and which have given rise to the opinion that *Pemphigus acutus* is contagious, were really epidemics of *impetigo*.

Further, the severity of the constitutional symptoms may lead to confusion with *small-pox* ; but in *small-pox* there is a characteristic prodromal backache, and the original lesions are shotty papules which develop into umbilicated pustules.

Prognosis.—The prognosis is grave. Between 60 and 70 per cent. of all cases die either directly from the disease or from some intercurrent affection.

Treatment.—Rest in bed ; easily digestible nourishing diet. Look for possible sources of septic absorption on the skin or from the teeth, tonsils, nose, and bowel, and if possible have a mixed vaccine prepared from such sources. Injections of polyvalent antistreptococcic serum have been tried. Internally—use intestinal disinfectants. Salol. grs. v. t. d. s. : Dimol. grs. i. t. d. s. : Kerol, etc. Quinine, iron, and strychnine may also be administered. Locally, the blisters should be clipped, and the raw surface dressed with compresses of Calamine Lotion with $\frac{1}{2}$ gr. of Hyd. Bichlor. in every six ounces.

Pemphigus vulgaris* ; *Pemphigus chronicus

A disease possessing considerable resemblance to *Pemphigus acutus*, except that it is attended by less general disturbance of health, runs a more chronic course, and tends to relapse and relapse again after intervals of complete or partial disappearance of all lesions.

Etiology.—On this point no definite knowledge is available. A nervous origin has been suggested, but this hypothesis is unproved. Bacteriological examinations have given inconstant results. Probably many micro-organisms may give rise to bullous eruptions. It is not unlikely that the cause will yet be found to depend on some toxin absorbed either from the gastro-intestinal tract, or from some septic focus elsewhere in the body.

Histo-pathology.—The walls of the bullæ consist as a rule of the whole thickness of the stratum corneum, with, frequently, some cells of the prickle-cell layer. The raw surface left when a bulla ruptures is formed by the derma. After a bulla ruptures restitution of the epithelium quickly takes place, and the new epithelium in its turn may become raised into a bulla.

Until secondarily infected the contents of the bullæ are clear—but microscopical examination invariably shows some leucocytes. The

contents of an unruptured bulla are primarily germ-free. In the true skin one notices a dilatation of superficial capillaries with some œdema of the papillary layer.

Occasionally alterations in the peripheral nerves have been observed, but these are hardly likely to be etiological. Probably they depend on the same cause as is responsible for the bullous eruption, viz. some toxæmia.

Symptoms and Course.—The disease may affect children and adults. The eruption consists of rounded bullæ, tense and elevated, of varying size, from a pin's head to a blister as large as the palm of the hand. The bullæ appear on skin that is apparently normal, without any peripheral zone of redness in the early stages, though at the termination of their evolution there may be a slight erythema round them.

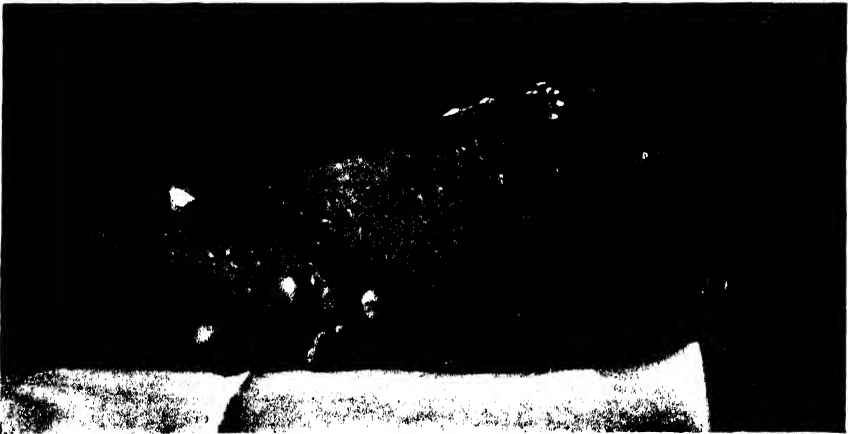


FIG. 76.—Pemphigus vulgaris. As a rule the lesions are not so markedly grouped.

As a rule there is no pain associated with the appearance of the bullæ, but sometimes their evolution is preceded and accompanied by a little itching. There may be a slight elevation of temperature when the eruption is appearing, but this is unusual. The covering of the bullæ varies in thickness, but is usually thin, and through it one can see the clear serous contents. The bullæ appear suddenly, grow rapidly, and reach their full size in two or three days. When they rupture a raw red base is exposed, and on palpation no infiltration is discoverable.

Occasionally the bullæ dry up, the raised horny layer which had roofed them over forming a thin crust, which separates speedily, leaving a red-brown macule covered with new epithelium, which gradually fades without leaving any scar.

The eruption may appear on any part of the body except the scalp, but usually it commences on the trunk—more particularly on the chest wall. The limbs are very commonly affected, while the hands, the feet, and the face are as a rule affected late. Bullæ may also appear in the mouth.

At first the bullæ are discrete, isolated and tense, oval or rounded in shape. When the eruption has reached a certain stage it may become stationary, or it may continue to spread by the formation of small fresh bullæ at the periphery of the older ones, so that confluence of adjacent bullæ tends to occur, and large areas of the integument may be covered. When these bullæ separate or rupture, large areas, which may be dry, or which may be moist and become fetid and painful, are left. In these extensive cases with marked confluence of bullæ, and the later development of large raw surfaces, there may be a progressive deterioration in the health of the patient and death may supervene. If the bullæ are not ruptured, they begin to lose their tenseness and become flaccid, their roofs covering a few drops of serum, which gradually dries up, and a condition of exfoliation produced by the separation of the horny layer that had roofed in the bullæ is produced. This is sometimes called *Secondary pemphigus foliaceus*.

As a rule, Pemphigus vulgaris lasts for months. It may last for years, outbreaks of the eruption alternating with periods of complete freedom. It may terminate fatally.

Prognosis.—Most cases of Pemphigus vulgaris which are not very extensive end in recovery, though this may be long delayed. Cases in young strong people, occurring without rise of temperature, and in whom the bullæ are tense and well filled and not too extensive, usually run a favourable course (Wolff-Mulzer). Zeisler believes that tense bullæ are indicative of a mild case, and flaccid bullæ of a severe one.

As already stated, the tendency to relapses is great, and a subsequent recrudescence may be much more severe than the initial attack.

Extensive cases usually run a very chronic course, with progressive enfeeblement, loss of weight and appetite, insomnia, intermittent rises of temperature, and may end fatally. This is particularly the case if each fresh outbreak is accompanied with fever, and if the bullæ are weak and flaccid, and the patient badly nourished at the start.

Differential Diagnosis

1. *Bullous urticaria* may be confused. But in bullous urticaria the bullæ arise on the top of urticarial wheals; ordinary urticarial wheals are to be found in the neighbourhood; and the skin gives an "urticarial reaction" if scratched with a blunt penholder.

2. *Erythema multiforme bullosum* may be confused with **P. vulgaris**. But in *Erythema multiforme bullosum* the evolution of the eruption

is more rapid ; the eruption is polymorphic, bullæ being interspersed with macules and papules of a rose-red colour velvety to the touch ; the bullæ rise from a red base, with some infiltration, and the eruption appears usually at first on the extensor aspect of the limbs. Further, it runs a much more acute and shorter course, terminating in recovery ; and it may have been preceded by sore throat or by joint pains.

3. *Bullous eruptions*, due to the ingestion of drugs, may be confused with *P. vulgaris*, and it is always well to inquire as to what medicine the patient has been taking. Boric acid, salicylic acid and salicylate of soda, arsenic, the bromides and iodides, quinine and phosphorus may all produce bullous eruptions in the susceptible ; while the local application of any preparation of tar or iodoform may give rise to bullæ.

4. *Self-inflicted eruptions*—produced by local applications—may be bullous ; but these are usually met with on easily accessible parts of the body, and it is often possible to discover on the lesions some traces of the irritant with which they have been provoked. Further, in almost all cases of self-inflicted eruptions it will be found that the palatal and the conjunctival reflexes are absent—and there may be definite signs of hysteria, *e.g.* areas of cutaneous hyper-æsthesia or analgesia, with limitation of the field of vision.

5. *Pemphigus vulgaris*—with lesions on the buccal mucous membrane—may suggest *Diphtheria* or *Syphilis*. But in diphtheria the Klebs Löffler bacillus is easily discovered in a “ smear,” and in syphilis there are other symptoms, *e.g.* general adenitis, cutaneous syphilides, and a positive Wassermann reaction.

6. *Dermatitis herpetiformis* is readily confused with *Pemphigus vulgaris*. It should be distinguished on the following grounds :—

Dermatitis herpetiformis.

Pemphigus vulgaris.

<i>Itching :</i>	Usually intense.	Usually very slight, if present at all.
<i>Arrangement of lesions :</i>	In groups ; arranged like herpes.	Arranged symmetrically — without characteristic herpetic grouping.
<i>Character of lesions :</i>	Polymorphic ; erythema, urticarial wheals ; vesicles, tiny grouped bullæ.	Large bullæ ; without erythema.
<i>General health :</i>	General health remains good.	Health tends to deteriorate gradually.

Treatment.—The patient should be put in bed and kept on nourishing, easily digestible food. Foci of possible septic absorption should be looked for in the mouth, tonsils, bowels, and elsewhere, and if found should be dealt with. If such a focus is found, a vaccine made from its contents may be of use in the treatment. Of internal remedies arsenic is the most efficacious. It should be given in progressively

increasing doses to the limits of toleration, preferably as Fowler's or Donovan's solution. When the administration of arsenic is suspended the bullæ will often reappear; and when toleration of the arsenic is established bullæ may continue to crop out in spite of its continued administration. Patients suffering from pemphigus seem to be particularly liable to pigmentation of the skin by arsenic—a point that should be remembered.

Strychnine internally is also of use, and phenazone in small doses will often help. I have seen good result from the administration of Collosol Sulphur; and general tonic treatment is advisable. I have tried intravenous injections of Mercurochrome, but without advantage.

In America the treatment known as the Davis Treatment has a great vogue. It consists in the subcutaneous injection of 0.065 grm. of iron cacodylate and of a 3 per cent. solution of coagulen on alternate days. The injections are given over a long period, with an interval of a few weeks every two months. Good results are claimed.

In localised recurrences of pemphigoid bullæ on the arms, I have seen good follow the application of a fly-blister over the seventh cervical spinous process.

Local Treatment.—The blisters may be punctured with a sterile needle and then dressed with a dusting powder, or a lotion of Calamine and Ichthyol, grs. v.– $\bar{3}$ l., or with Lassar's paste. If there is extensive desquamation with large raw surfaces, the comfort of the patient is often greatly promoted by immersion for a prolonged period in a mild antiseptic bath, e.g. Eusol $\bar{3}$ ss. in a 30-gallon bath; Acid Boric $\bar{3}$ ss. in a bath, etc. In some hospitals, particularly in Germany, a patient suffering from severe pemphigus is treated in a continuous bath, in which he lies, eats, and sleeps.

Pemphigus foliaceus

There is a *primary pemphigus foliaceus*, and a so-called *secondary pemphigus foliaceus*. This latter, as already stated, is in reality a pemphigus vulgaris in which the symptoms assume some of the characters of pemphigus foliaceus; or in which a case beginning with the apparent mildness of pemphigus vulgaris may drift on into a true pemphigus foliaceus.

Symptoms and Course.—The disease may affect children and adults. In primary pemphigus foliaceus the bullæ are from the commencement of the disease flaccid in character; tend to lose their serous appearance early and become opaque; spread peripherally, not by confluence with subsidiary bullæ developed in their neighbourhood, but by a progressive lifting up of the horny layer, so that when the blister ruptures a large area, denuded of its epithelial covering, is left. These raw surfaces do not exhibit any strong tendency to epithelialise,

consequently later crops of bullæ do not appear on the old sites, but on areas of the skin adjacent to them. The skin between these red excoriated areas is but loosely attached, and slight lateral pressure with the tip of a finger will cause the epidermis to slide off the subjacent tissue like sodden cigarette paper, leaving a raw, moist, red, exposed surface beneath. This is Nikolsky's sign, which is held by many to be pathognomonic of Pemphigus foliaceus. It depends on the fact that there is a lessening of the attachment between the stratum corneum and the prickle-cell layer. Sometimes, from the very beginning of the disease, the bullæ are so large and flaccid that they bear only a

slight resemblance to blisters, the amount of fluid within them being only sufficient to dissect off the horny layer without putting it on the stretch. In these cases, however, it is often possible to discover characteristic bullæ at the edges of the large flaccid lesions. The disease spreads rapidly and may involve the whole integument. The body hairs fall, the scalp hairs become thinner. The nails become friable, striated, and may fall. A kind of ill-formed, easily separated layer of horn cells tries to spread over the raw surfaces, but it is ill attached and easily stripped off, so that the patient is in a continual condition of desquamation,



[Photo by Dr. Oram.]

FIG. 77.—Pemphigus foliaceus.

large leaf-like plaques of horn-cells exfoliating constantly and filling his bed each morning. There is a rapid but incomplete restitution, which sheds again with equal ease (Fig. 77). Beneath these ill-formed scales the raw red surface is covered by a kind of gummy exudate, usually fetid and unpleasant. This is most marked in the flexures, *e.g.* of the groins, elbows, armpits, and back of knees. Here the thin horny layer of integument undergoes rapid maceration, and the underlying tissue becomes pulpy, weak looking, and exhales a most unpleasant odour.

The disease usually lasts for a long time—possibly several years—

but invariably ends in death from exhaustion, intercurrent pneumonia, or diarrhœa.

Etiology.—The cause is unknown, but in several cases the *bacillus pyocyaneus* has been found, and R. L. Sutton believes pemphigus foliaceus to be pemphigus vulgaris with a superadded *bacillus pyocyaneus* infection.

Diagnosis.—Several other diseases of the skin are characterised by general desquamation, but *P. foliaceus* is distinguished from them by the constant presence of red, raw, moist surfaces under the large scales ; by the presence of bullæ, though these may be hard to find ; by its chronicity and its invariably fatal termination.

Treatment.—General treatment should be directed to keeping up the strength of the patient. Arsenic, strychnine, etc., have not the efficacy in *P. foliaceus* that they exhibit in *P. vulgaris*.

Antiseptic baths add greatly to the comfort of the patient, and lessen the unpleasant odour. Mild antiseptic ointments may also be employed. A lotion of Glycerini Plumbi Subacet, $\bar{3}$ i. and Glycerine, $\bar{3}$ i. in $\bar{3}$ x. of water is useful. Septic foci should be looked for and dealt with, and a vaccine may be made from their contents.

Pemphigus vegetans

This rare and serious variety of pemphigus affects adults only. Its cause is unknown.

Symptoms and Course.—It begins in the mouth or on the lips, in the form of transient bullæ, which rupture and give place to red, raw, painful lesions. After a variable period, during which the mouth alone is affected, the mischief spreads to the trunk.

The bullæ which appear on the skin do not tend to heal after rupture. Their base remains exposed and open, and is painful. In the groins, the armpits, the genital region and between the buttocks, where two skin surfaces are in contact and where heat and moisture abound, the raw surfaces left after rupture of the bullæ become covered with painful, hypertrophic vegetations, not unlike syphilitic condylomata. These vegetations discharge a foul-smelling secretion.

The disease usually ends fatally in a few months ; the presence of painful lesions in the mouth rendering feeding a matter of difficulty, the painfulness of the vegetations lowering the nervous resistance of the patient, and the fetid discharge weakening him progressively.

Diagnosis.—There is a risk of confusing the mouth lesions, associated with the vegetations in the groins and elsewhere, with *syphilitic manifestations*. But in *Pemphigus vegetans* the progress is more rapid, the prognosis is graver, the patients do not respond to mercury, and the Wassermann reaction is negative.

Treatment is hopeless. Rest in bed ; nourishing diet ; antiseptic

baths and antiseptic dressings to the vegetating surfaces may give some relief, and retard, but not prevent, the fatal issue.

The condition about to be described does not depend, like pemphigus, upon some toxic cause, but upon a congenital abnormality. It is included here because the lesions are pemphigoid.

EPIDERMOLYSIS BULLOSA HEREDITARIA

A very rare disease characterised by the appearance of blisters at points of friction or injury may be mentioned briefly. *Epidermolysis bullosa hereditaria* is a congenital condition. It is hereditary as well as congenital, and may sometimes be traced through several generations. It first manifests



FIG. 78.—Epidermolysis bullosa hereditaria.

The patient's daughter, granddaughter and grandson also suffered.

itself in childhood, and the tendency to bullous formation may persist all through life. It depends upon some vice in the epidermis which reacts in a blister under the provocation of slight injuries or bruises, such as may be inflicted by slight blows, or the pressure of clothing, shoes, garters, etc. The lesions appear on parts of the integument normally most exposed to such injuries—*e.g.* the skin of the hands, and the backs of the knuckles and phalanges, the elbows and the knees (Fig. 78). The bullæ may be single or multiple, do not tend to run into each other, and have a seasonal character, being more frequent in summer than in winter. The lesions are painless, and heal rapidly if the bullæ do not become infected secondarily. Secondary infection may retard healing, and may lead to the formation of painful fissures.

In people suffering from this disease a blister may

be provoked by rubbing the skin with a finger, or by scratching.

In some cases the tendency to the disease seems to disappear with age. The condition does not interfere with the patient's general well-being. In many cases there is partial or complete absence or dystrophy of the nails.

Little is known as to the pathology of the condition ; but it has been said that there is complete absence of elastic fibres in the papillary and sub-papillary part of the corium.

Treatment.—Gentle inunction of mild ointments is said to lessen the tendency to the appearance of the lesions ; and glandular therapy, especially administration of parathyroid substance, or treatment by arsenic or collosol sulphur internally, may be tried.

Dermatitis herpetiformis ; Pemphigus pruriginosus

This is one of the rarer varieties of skin disease, long regarded as a form of pemphigus, but ultimately shown to be a definite and separate entity by the work of Duhring and Brocq.

Definition.—Dermatitis herpetiformis is a chronic disease of the skin, characterised by the appearance of successive outbreaks of polymorphic lesions with a preponderance of small bullæ, grouped in clusters, associated with violent pruritus, and running a long course, with frequent relapses, without serious interference with the patient's general health.

Etiology.—The condition tends to develop in people who have been subjected to severe nervous strain, and the first outbreak may follow a nervous shock.

In some cases there is albuminuria, glycosuria, diminished nitrogen in the urine ; and in all cases there is marked eosinophilia, as many as 10 per cent. of the white corpuscles in the blood being eosinophiles. These conditions are probably, however, only concomitants of the disease and not its cause.

The most probable cause is some auto-intoxication from some septic focus in the body, acting upon a skin predisposed to eruption by some neuropathic disturbance. The condition is neither contagious nor infectious.

Pathology.—The vesicles or bullæ characteristic of the disease develop in the deeper layers of the epidermis, and raise it up from the papillary layer of the true skin. The bullæ contain serum, and frequently leucocytes, of which a large proportion are eosinophiles. In the true skin there is some œdema, with a moderate degree of leucocytic infiltration round the vessels.

Symptoms and Course.—The disease affects both sexes in almost equal proportion, and most often the first attack occurs between the ages of twenty and forty. It may attack apparently healthy persons without preliminary symptoms. More often it appears after, or in the course of, some nervous disturbance. The first outbreak may occur suddenly, without antecedent symptoms, but often the eruption is preceded by a few days of malaise, and violent pruritus, with a sensation of burning in the skin and occasionally neuralgic pains. The disease may begin acutely and resemble a violent attack of erythema multiforme, and

indeed be mistaken at first for that disease, the distinction being made later when the acute attack has subsided, and the recurring character of the disease, with its grouped vesicular or bullous lesions, has manifested itself in later outbreaks.

The first outbreak may occur on any part of the body except the face. Usually it appears symmetrically, first on the limbs, particularly the forearms, and then on the trunk. As a rule, the eruption consists of three elements (Plate XVII).

1. *Reddish plaques*, sometimes infiltrated, intensely itchy, and often resembling urticarial lesions, often covered with pruriginous papules.

2. *Vesicles or small bullæ*—differing in size and shape—flat or raised, isolated or more often multiple, and if multiple arranged in clusters like herpetic vesicles. The bullæ may arise on the erythematous plaques, or may spring from apparently healthy skin without any red zone round them. A cluster of bullæ may evolve simultaneously, or one vesicle may appear first, to be followed progressively by others which are grouped peripherally to, and often circularly round, the initial lesions. As the bullæ appear the itching is aggravated. A cluster of lesions requires a few days for its full evolution, then it begins to subside, and simultaneously, or shortly afterwards, other clusters begin to appear on other parts of the body. If the bullæ are ruptured, the intense itching subsides a little.

3. *Pustules*.—These are usually due to secondary infection of the vesicles, though they may be primary lesions. On the same patient, at the same time, one may see grouped lesions of various types—erythematous, papulo-vesicular, bullous, pustular—and sometimes one group of lesions will exhibit all varieties of type. But in every well-marked case of Dermatitis herpetiformis it is the vesiculo-bullous lesion which predominates. Accompanying every fresh outbreak of lesions there is marked indicanuria.

The primary lesions, in process of retrogression, may undergo changes which produce scales or crusts; and scratching may produce excoriations, which add to the polymorphism of the clinical picture. The scratching may leave scars.

Any part of the skin may be affected by these grouped lesions, as well as the mucous membranes of the mouth, though this is rare; but, as a rule, the hands and feet remain free.

Intense itching, often worse at night, is a marked feature of the disease. It is confined to the areas affected by the eruption or upon which the eruption is about to appear. Sometimes it is associated with a sensation of burning, pricking, or tension. In spite of the itching, which may interfere seriously with sleep, the general condition of the patient remains good, though some highly nervous patients lose their appetite, develop headaches, and may become the victims of profound

PLATE XVII



DERMATITIS HERPETIFORMIS

(Lent by Dr. W. Herbert Brown)

Note the reddish plaques and grouped bullae

nervous prostration, with loss of flesh, which may sometimes amount to marasmus. The disease is a chronic one with acute exacerbations and runs a fever-free course.

Sometimes long periods may elapse between the outbreaks of lesions. Sometimes a fresh eruption appears as the old one subsides. As a rule the disease lasts for months or years—from 6 months to 20 years or more—and its severity varies greatly.

The lesions disappear without scar formation (though scars are often left by scratching).

Differential Diagnosis.—A well-marked case presents such a typical history and clinical picture that diagnosis should not present any great difficulty. But confusion may arise with *Erythema multiforme*. *Erythema multiforme* is essentially an acute disease of short duration, not attended by such intense pruritus as *Dermatitis herpetiformis*, and its lesions are scattered, without grouping, and are usually of a vivid rosy-red tint. It may also be confused with *Pemphigus vulgaris* (q.v., p. 245).

A rare form of *Urticaria* (*urticaria bullosa*) may be confused with *Dermatitis herpetiformis*; but in this disease bullæ appear on only a few of the urticarial lesions, being simply accidental concomitants of the urticarial wheal, and not an essential part of the disease.

Confusion with *Scabies* may occur, but a careful examination for “burrows” should clear up any doubt.

Prognosis.—The prognosis as to life is good. It is very rare for a patient to die of this disease, but the prognosis as to the duration of the disease is bad. It may last a lifetime after its inception, with intermittent periods of freedom and recurrence; and the intensity of the pruritus tends to interfere greatly with the patient's capacity for work.

Treatment.—This is a matter of great difficulty. There is no known specific.

General Treatment.—Freedom from worry; good wholesome food, with abundance of milk and vegetables; healthy surroundings, and work easily within the patient's capacity, are important factors in treatment.

Septic foci in teeth, tonsils, nose, pharynx, ear, bowel, and accessory sinuses, etc., should be sought for and dealt with. If any septic focus is found, a vaccine should be made from its contents, and used either pure or mixed with a culture from the intestinal flora.

The bowels should be kept regular, and intestinal antiseptics, such as kerol, salol, guiacol, or dimol may be administered. Of internal remedies, experience has taught me that a combination of arsenic and potassium bromide is the best. Min. ii. of *Liquor Arsenicalis* (increased gradually to min. v.) combined in a mixture with grs. 15 of potassium

bromide, three times a day, frequently gives great relief, and leads to the disappearance of the lesions.

Quinine, strychnine, ichthyol, antipyrin, and collosol sulphur may also be used. Salvarsan and neosalvarsan have been used with advantage. The subcutaneous injection of 1-5 c.c. of whole blood or blood serum derived from the patient himself has been tried with some success.

Local Treatment.—Duhring strongly recommended sulphur ointment, which may be used alone or in combination with salicylic acid ointment in equal parts. Antipruritic ointments or lotions containing 2-5 per cent. carbolic acid, 5-10 per cent. ichthyol, 1-5 per cent. of Liquor Carbonis Detergens, $\frac{1}{2}$ -1 per cent. of pyrogallie acid, or 1 per cent. of menthol often give relief. Warm baths medicated with sulphur or tar frequently ease the itching, and X-rays or radiation with ultra-violet rays will often relieve this symptom.

HERPES GESTATIONIS ; HYDROA GESTATIONIS

Pregnant women, or women during convalescence after child-birth, occasionally suffer from a herpetiform eruption. If it occurs during pregnancy, it generally appears between the third and the sixth months. The eruption consists of erythematous patches, tiny bullæ, vesicles and sometimes papules, which come out in crops, are arranged in clusters, and are attended by considerable itching. The lesions are followed by pigmentation. The condition is met with chiefly in a first pregnancy, but multiparæ may suffer, and it is usual for a woman who has had an attack in the course of her first gestation to have a recurrence in later pregnancies. The eruption, which may last for weeks or months, tends to disappear spontaneously when gestation terminates.

The **diagnosis** is easy, and the **prognosis** is good.

Treatment is on the same lines as for Dermatitis herpetiformis. The patient should be put on a milk diet for a time. Rapid and excellent results have been obtained in Germany by the subcutaneous injection of blood-serum from healthy pregnant women, and by the use of horse-serum.

In very severe and extensive cases the question of interrupting the pregnancy may arise ; but this heroic step is rarely necessary.

CHAPTER XIII

TOXIC ERUPTIONS OF UNDETERMINED CAUSE, CHARACTERISED BY HÆMORRHAGES INTO THE SKIN

The Purpuras

THE descriptive term Purpura is applied to hæmorrhages into the cutaneous and subcutaneous tissues arising without external trauma.

These hæmorrhages do not fade when pressure is applied to them, and during their reabsorption they pass through a series of chromatic changes. They vary in size and shape. If small, punctate, or nummular hæmorrhages they are called *petechiæ*; if large and of irregular shape they are called *ecchymoses*; if linear they are known as *vibices*; and if the hæmorrhage is sufficiently copious to form a small tumour they are known as *hæmatomas*. Purpuras are divided into *symptomatic* and *idiopathic*. Symptomatic purpura is the variety that occurs in the course of infectious diseases or toxæmias.

The idiopathic purpuras are three in number :—

(1) *Purpura simplex*; (2) *Purpura* or *Peliosis rheumatica*; (3) *Purpura hæmorrhagica* (*Morbus maculosus Werlhofii*). Probably all these forms of idiopathic purpura are nothing more than gradations of the same disease, the precise cause of which is unknown. There would appear to be an individual predisposition to purpuric eruptions in the skin. This predisposition may be congenital, or acquired through some nutritional defect exerting its influence on the blood vessels.

Purpura simplex

Purpura simplex is most commonly met with among children. It is usually preceded by slight fever, and the lesions, which are small, numerous petechiæ, appear chiefly on the legs, though they may occur on the trunk or upper limbs. Sometimes the eruption is associated with joint-pains. The prognosis is good. The eruption clears away in two or three weeks.

Peliosis rheumatica

Purpura rheumatica.—After a prodromal stage which lasts a few days, during which there is malaise, headache, and an intermittent

temperature, with pain in the muscles and joints, and sometimes some swelling over the joints, an eruption of bluish-red macules, varying in size from a pin-head to a shilling, appears on the legs. Subsequent crops of macular hæmorrhages may break out on the back and chest, the upper extremities, and, very rarely, on the face. The lesions may also appear on the mucous membranes. As the hæmorrhages occur in crops the lesions are of different ages, and consequently vary in colour from bluish-red to fawn colour. The condition lasts from three to six weeks and usually runs a favourable course; but occasionally, when the skin condition is clearing up, serious complications may arise in the form of recrudescence of the fever, with nausea and vomiting, and hæmorrhage from the bowel or kidneys.

Purpura hæmorrhagica

Purpura hæmorrhagica is generally met with in young and delicate girls. The prodromal symptoms are of the same kind as in purpura rheumatica, but they are more acute and severe. The hæmorrhages are larger (ecchymoses, for the most part) and tend to coalesce. They may occur anywhere on the skin, and may affect the face. There are frequently hæmorrhages into the mucous membranes of mouth and larynx, and in severe cases there may be epistaxis, bleeding from the mouth, hæmoptysis, hæmatemesis, and hæmorrhages from the bowel and kidneys as well as hæmorrhages into serous cavities, and into the tissues of organs. Hæmorrhages may occur in the meninges or brain with fatal effect. During an attack the number of blood platelets in the circulating blood is reduced: clotting-time is normal or only slightly lengthened, but there is a delay in the shrinking of the clot. The symptoms tend to subside in 4-6 weeks, but many cases spread over months, and the continual hæmorrhages may produce profound anæmia, which may cause death.

Henoch's Purpura is a sub-variety of purpura hæmorrhagica. It is a fulminating type of the disease, in which all the symptoms of purpura hæmorrhagica are exaggerated, and to which some of the symptoms of erythema multiforme may be added. But in addition there are what are known as "*visceral crises*," which may simulate acute cholecystitis and appendicitis. Relapses are frequent, some cases recover completely, but death may occur in the course of a few days.

Though sometimes fatal, a large majority of cases of ordinary Purpura hæmorrhagica recover. The extravasated blood is gradually re-absorbed, and the length of convalescence depends fairly accurately on the acuteness of the attack and the severity of the hæmorrhage.

Diagnosis.—The lesions are so characteristic that the diagnosis presents little difficulty.

Etiology.—The cause is unknown, though many factors may

play a part, *e.g.* rheumatism and focal sepsis. True purpura is probably separated but slightly from Erythema multiforme in etiology. The severe cases are probably all due to some form of sepsis.

Treatment.—The patient should rest in bed ; the diet should be light but nourishing. Alcohol should be forbidden. No local applications are required, except to ease joint pains if present, in which case lead and opium compresses are useful.

For the internal treatment of purpura the salicylates are useful, and calcium, iron and quinine may also be administered. Intramuscular injections of whole blood from a healthy individual have done good in severe cases.

In refractory cases X-ray radiation of the spleen has been tried with good effect : and in very severe cases splenectomy has been performed.

If the general symptoms are severe, the heart should be watched carefully, and appropriate treatment applied if any disturbing symptom appears.

Before leaving the subject of purpura, something may be said as to three other conditions associated with hæmorrhages into the skin.

(1) **Purpura neonatorum.**—One type is often due to syphilis. The child born apparently healthy develops in the first few days of life hæmorrhages into the skin and mucous membranes. Sometimes the umbilical cord oozes blood. Many of these children die.

(2) Another type—invariably fatal—is known as **Morbus maculosus neonatorum.** It begins later than syphilitic purpura, usually in the second or third week of life. Hæmorrhages occur in the skin, and from the nose, mouth, stomach, bowels, lungs, and kidneys.

(3) **Senile purpura.**—At the other end of the scale of life, through fragility of the blood-vessel walls and diminished coagulability of the blood, we meet with hæmorrhagic eruptions in the skin of old people. The lesions are usually petechial, and are most common on the legs. They are not attended by any general disturbance in health.

Hæmophilia, scurvy in the adult, and infantile scurvy (Barlow's disease) are often associated with purpuric manifestations in the skin.

MAJOCCHI'S DISEASE. PURPURA ANNULARIS TELANGIECTODES

In the last few years a considerable number of cases of a purpuric condition which develops very gradually and persists for a long time, have been described by Majocchi and others. According to Majocchi, the disease occurs only in men, but others claim to have seen it in both sexes : MacKee reports 31 males in 38 cases.*

It begins as tiny petechial hæmorrhages, usually in the skin of the legs. These petechiæ persist for a long time, and then begin to assume an annular, serpentine, or linear arrangement, and exhibit a pale centre girt about by a

* George M. MacKee, *Jnl. Cutan. Dis.*, 33. 129, 186, 280, March, April, and May, 1915.

ring of deep red, or bluish-red, or brownish-red points. After persisting for months the lesions disappear, leaving a pigmented area which by-and-by clears up, a mild degree of permanent cutaneous atrophy marking the site of the lesions.

The condition is believed to depend upon some neurotrophic disturbance of the vaso-motor function, the proximate cause being slight traumata.

No treatment is of any avail. The condition tends to disappear spontaneously.

CHAPTER XIV

NEURODERMATOSES

Pruritus

Definition.—Pruritus, or itching, is a symptom of many cutaneous diseases. But pruritus as a dermatological entity is a pure sensory-neurosis of the skin without objective primary lesions. It is essentially a disturbance of sensation, expressing itself not in pain of an ordinary kind, but in that peculiar form of skin-pain called itching. The visible lesions which appear on the skin during an attack of true pruritus are secondary and due to scratching.

Pruritus may be local or general: confined to a small area, as in *pruritus ani*, or involving the whole integument, as in *pruritus senilis*. The attacks of itching usually begin suddenly, and may be slight or severe. Continuous or intermittent, they are subject to exacerbations depending upon alterations in one's emotional state or physical condition. Sudden cold, the warmth of a fire or of bed, a glass of wine, a cup of coffee, may each bring on or intensify an attack. The pruritus may vary from a slight and tolerable itching to a condition of torment in which the sufferer attacks his skin with tearing finger-nails, or seeks relief by rubbing himself with a coarse towel or brush till the skin is torn and bleeding. Often relief comes when the skin is torn—and the paroxysm of itching and scratching, with the subsequent calm stage, has been compared by an American dermatologist to the sexual orgasm.

The scratching gives rise to secondary lesions: excoriations which may become crusted, or infected with pus organisms, so that an eczematous dermatitis is set up. Pigmentary changes and chronic infiltrations of the skin may also be produced by the scratching.

If the pruritus is generalised and intense, the patient soon becomes exhausted: the itching prevents sleep, the sleeplessness exhausts the nervous system so that the pruritus is less easily borne, and the sufferer finds himself in the orbit of a vicious circle. I have known a patient become acutely maniacal in consequence of uncontrollable senile pruritus—and sufferers have been known to seek relief in suicide.

Etiology.—The causes of pruritus are many, but they are often difficult to determine. *Pruritus senilis* is due to a senile atrophy of the

skin with a diminution of the natural skin secretions. Possibly, also, a toxic element plays a part.

Diabetes, Bright's disease, jaundice, pregnancy, chronic gastric or intestinal mischief, rheumatism, and blood dyscrasias may all be associated with pruritus, which in these conditions depends upon unusual products of metabolism irritating the nerve endings in the skin. In all cases of general pruritus examine the urine with care—not once but many times.

Generalised pruritus may depend upon psychic disturbance, expressing itself, not in a delirium of the higher mental faculties, but in a delirium of the cutaneous nerve-endings. Some nerve-endings are peculiarly intolerant of external stimuli, and woollen underclothing will often excite pruritus in the susceptible.

Two special forms of local pruritus—*pruritus ani* and *pruritus vulvæ*, which will be described later—are often dependent upon conditions inside the anal orifice (*e.g.* hæmorrhoids), or inside the vagina (*e.g.* an erosion of the cervix), and it is well, when considering pruritus round any orifice of the body, to *look for the cause inside the orifice*.

Pruritus Senilis—a distressing accompaniment of old age, is rare before the sixtieth year, and most common in the eighth decade of life. The skin appears and feels smooth and sometimes glassy, looks atrophic and dry, and occasionally, in places, is finely scaling. The pruritus is intense—worse at night, and may rapidly reduce the sufferer to a condition of profound weakness and emotional facility. Secondary lesions due to scratching may assume various forms, but, owing to the deficient nutrition of the skin, an eczematous development is rare.

Before making a diagnosis of *Pruritus senilis*, exclude *pediculosis corporis* carefully, no matter what the social standing of the patient.

Pruritus Ani.—*Pruritus ani* readily sets up eczema; and eczema in this region is associated with intense itching, so that it is often difficult to say which was present first. In a recent case, if no eczema has developed, the itching region may be of normal appearance, except for the presence of a few scratch marks. In a condition of long standing, however, secondary changes have taken place. The puckered anus is surrounded by a circle of radially arranged ridges and furrows, covered by a sodden, thickened chamois-leather-like epidermis, the adjacent sides of the ridges and the bases of the furrows being red and weakly oozing. The itching, which has begun round the anus, may spread forward into the perineum along the raphe and on to the scrotum, or backward and upward between the buttocks. The itching, which is most intense at night, may be very troublesome also by day, and may occasion great suffering.

The causes are many, *e.g.* hæmorrhoids, polypi, fissure of the anus, fistula, thread-worms, chronic constipation, malignant ulceration of

the rectum, or dampness round the anus from whatever cause arising. Those cases which seem to be idiopathic can usually be associated with some definite lesion if a careful examination is made. Some cases are due to glycosuria. In old standing cases, according to Lockhart-Mummery, there is a fibrosis in the deeper layers of the skin which implicates the nerves and keeps up the disturbance. Dwight Murray believes that many cases are due to a chronic streptococcal infection of the skin round the anus with the *streptococcus faecalis*.

The itching is made worse, in many patients, by excess of coffee, spiced foods, and tobacco, and it is particularly susceptible to the stimulation of alcohol, especially in the form of port or the red wines.

Pruritus vulvæ may occur at any age. In children it is often due to thread-worms. In adults it is usually due to some condition inside the vaginal orifice associated with discharge—*e.g.* gonorrhœa, a fissure, cervicitis, endometritis, or gross disease of the uterus or adnexa. In pregnancy it may be due to venous congestion, owing to the pressure of the enlarging uterus on the pelvic veins. It is also often due to glycosuria.

In many cases it is worse before or after menstruation. In acute cases the vulva shows little change; in the chronic case the inner lining of both labia becomes thickened and excoriated in consequence of scratching, and may present a wash-leather appearance. Patches of leukoplakia are not infrequent, and kraurosis vulvæ—an atrophic condition of the corium of the mucous membrane—may supervene.

Treatment.—In all cases of pruritus seek the underlying cause, and deal with it. This applies with equal force to the generalised case—in which the cause may be glycosuria—and to the local case, *e.g.* of *pruritus ani*, in which the cause may be a hæmorrhoid or thread-worms. In *pruritus ani* and *pruritus vulvæ* the dermatologist is well advised to seek the aid of the surgeon or the gynæcologist, unless the cause is patent.

In cases of generalised pruritus depending on a systemic intoxication (glycosuria, etc.), after directing our efforts to control the underlying condition, we should apply local sedatives to the skin. This is best done by the use of warm baths, medicated with some preparation of tar, *e.g.* Liquor Carbonis Detergens or Creolin, ʒss. in a 30-gallon bath. Sometimes baths seem to make the patient worse; in which case they should be stopped. Local applications may take the form of lotions, ointments, or powders. Suitable lotions are Acid. Carbol. Liq. (1-100). Liquor Carbonis Detergens, ʒi. in ʒx. of water; Lotio Calaminæ Oleosa—to which Liq. Carbonis Detergens, carbolic acid, ichthyol or other antipruritic agent may be added. Care should be taken not to make the lotion too strong; 1 per cent. of the antipruritic agent is usually enough. Thin ointments containing the same antipruritic agents may also be

used, or dusting powder of talc and starch, to which may be added camphor (grs. xx. to the ounce).

Cooling lotions such as--

Thymol, grs. v.
Spirit. vini meth.
Aq. āā ʒss.

often give relief.

Removal of blood by venesection and injection of $\frac{1}{2}$ -1 pint of normal saline into a vein has been recommended in very intractable cases.

Internally, the bromides, cannabis indica, and zinc oxide (grs. ii. t.d.s.) sometimes give relief ; as also do antipyrin, aceto-salicylic acid, and sodium salicylate.

Senile pruritus may be helped by bran baths twice a week, and by the local application of such an ointment as the following :--

R Liq. Carbonis Detergens, min. x.
Glycerini Amyli.
Ung. Acidi Salicyl., āā ʒss.
M.

Tincture of belladonna with or without bromides ; Tinct. cannabis indica in small doses ; and organic extracts, preferably small doses of thyroid, orchitic, or ovarian extract will sometimes do good. Intestinal antiseptics, kerol capsules or dimol, are also of service, while small doses of X-rays ($\frac{1}{4}$ -pastille dose once a week), or irradiation with the ultra-violet rays from a mercury vapour lamp. sometimes afford relief.

In all cases of generalised pruritus—whether senile or otherwise—the patient should wear cotton or silk underclothing, with the usual woollen garments on top if the weather is cold. Irritating foods, pickles, coffee, tobacco, and alcohol should be interdicted, and the food should be light and easily digested.

Treatment of Pruritus ani

In Pruritus ani the first thing, after dealing *secundum artem* with any lesion inside the anus or rectum, is to ensure a complete daily emptying of the lower bowel. This may be effected either by a copious enema of warm water, or by the regular use of a saline aperient. After every evacuation the anal orifice should be carefully cleansed and well washed with soap and water and then dried with care. I have known a patient with chronic pruritus ani (depending upon hæmorrhoids which he refused to have removed) keep the pruritus in abeyance by careful attention to this detail. One of the best local applications for pruritus ani is 1-2000 solution of Hyd. Perchlor. applied to the anal orifice several times a day. At night before retiring (for the pruritus often tends to be worse in bed) the anus may be carefully sponged with this

lotion. Argyrol and protargol (10 per cent.) or a lotion of 1-2000 Collosol Argentum are also of great use. Applications of ointments in pruritus ani are not to be recommended. There are two exceptions. Unguentum Conii applied at night often enables a sufferer to sleep; while if there are, in addition to the symptoms of itching, painful cracks and fissures produced by scratching, an application occasionally of Unguentum Cycloform Co. (Bayer) will abolish the pain and soothe the pruritus for a long period. Ointments containing cocaine simply mask the symptoms, and may engender the cocaine habit.

X-ray therapy (two $\frac{3}{4}$ -pastille doses at intervals of a fortnight) will often cure a case of pruritus ani when all other means have failed, and incidentally clear up any eczema that may be present. Treatment with radium and ionisation with zinc have also been recommended.

Unna has recommended touching the parts with the Paquelin cautery, and Ball, of Dublin, suggested undercutting the skin of the whole affected area and stitching it back in place again. Usually the cure is permanent; but the operation should only be performed when other means have failed.

In cases with great thickening of the skin, the late G. Stopford-Taylor used to get good results by rubbing the parts over with Liquor Potassæ, curetting them with vigour, and afterwards applying a mild carbolic ointment. The operation should be performed under general anæsthesia. Better results, in cases with gross thickening, may be obtained by the application for 20-30 seconds of carbon dioxide snow.

In some cases vaccine treatment with a vaccine from a culture derived from the fæces may give relief.

Internal remedies—with the exception of laxatives—are of little use, but benefit may accrue from the administration of urotropine in doses of 5 grs. thrice daily.

Pruritus vulvæ may be treated on the same general lines as pruritus ani. Particular attention should be paid to any vaginal discharge, and, if the patient suffers from glycosuria, frequent sponging with hot water, and the application afterwards of Linimentum Calaminæ, to which has been added a little carbolic acid or hyd. perchlor., will often lessen the irritation. Lead and opium lotion is also of use.

In all cases of pruritus, general or local, the patient must be instructed to resist the temptation to scratch. Scratching produces only a temporary relief, and may lead to secondary infections.

Instead of scratching, a patient should be trained to apply his remedies whenever the impulse to tear his skin seizes him, until the habit becomes automatic.

CHAPTER XV

DRUG ERUPTIONS AND INFLAMMATIONS OF THE SKIN DUE TO EXTERNAL IRRITANTS

Drug Eruptions

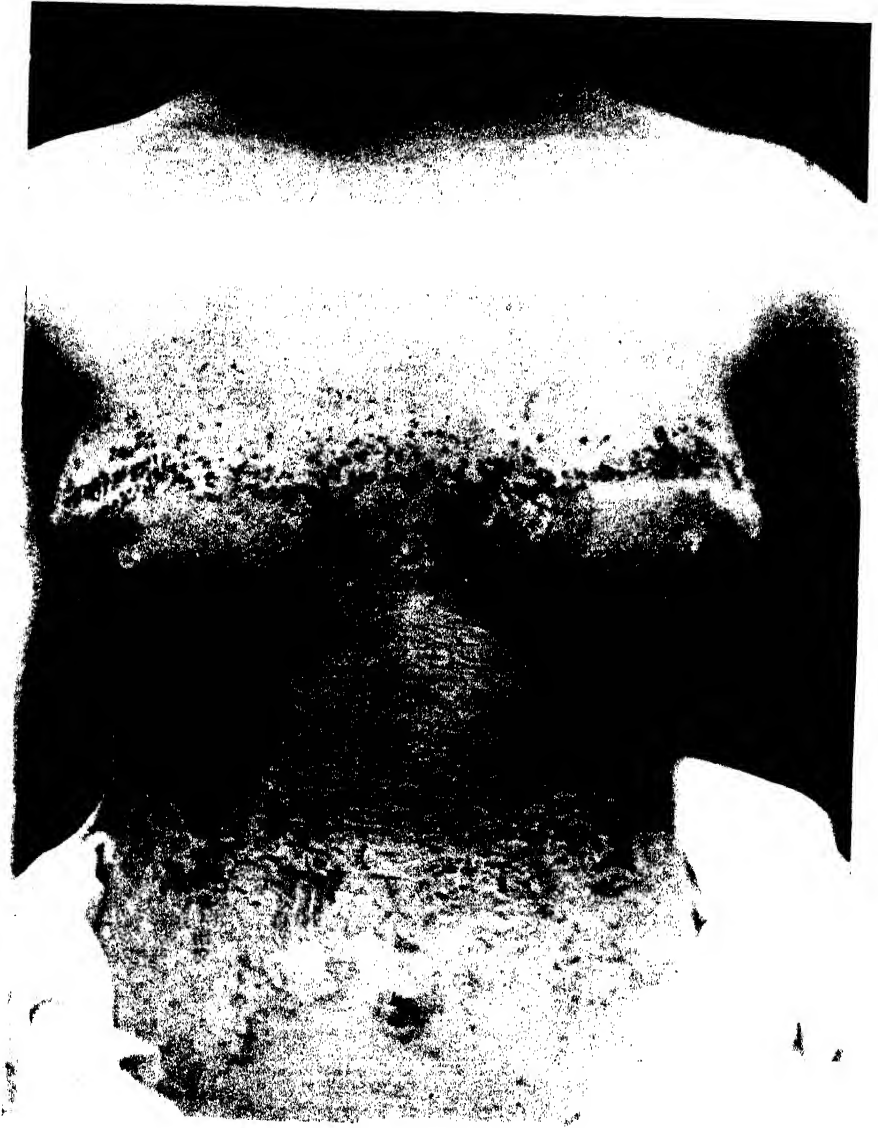
THERE is hardly any drug in general use which is not capable, if administered by the mouth or by injection, of producing a skin eruption in the susceptible.

Next to the kidneys, the skin is the chief organ for the excretion of substances absorbed from the intestinal tract. It is, further, an organ with an immense network of capillary vessels. Toxic substances absorbed into the circulation may therefore affect the skin in two ways, (1) by irritating the capillaries and their vaso-motor mechanism, or (2) by affecting the glandular elements through which they are being eliminated. In all cases of drug eruption there would seem to be an individual idiosyncrasy, *e.g.* a small amount of iodide of potassium will produce acne in one person, and a large amount will not affect another person in the same way. The idiosyncrasy would seem in many cases to be confined to one drug or group of drugs, *e.g.* a person who cannot take any of the halogen group without developing skin symptoms, may be able to tolerate arsenic, antipyrin, or belladonna in quantities which would produce an eruption in any one susceptible to them. Special conditions would seem to be capable of increasing a patient's susceptibility, *e.g.* a very small dose of iodide of potash may produce formidable skin-symptoms in a patient suffering from acute infective endocarditis, who when in ordinary health has been able to tolerate iodides with ease. Personal idiosyncrasy would seem to be influenced by the physical condition at the moment. Further, the same drug does not invariably produce the same kind of lesions in different patients. There is a marked polymorphism about drug eruptions. Usually the lesions are symmetrically arranged, and they may be distributed locally or generally. Most drug eruptions are of the erythematous type.

In a work of this size it is impossible to catalogue all the drugs capable of producing eruptions. One can only deal, briefly, with a few of the more important.

Antipyrin.—Many people are very susceptible to this drug, and after a first dose may develop a skin eruption which persists and grows worse so long as the drug is continued. The eruption takes the form of a large macular, or sometimes small papular erythema. It is

PLATE XVIII



DERMATITIS

Produced by Belladonna plasters

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symmetrically arranged, and may be urticarial or bullous, or resemble the eruptions of measles or scarlet fever.

Arsenic.—In small continued doses arsenic may produce a palmar and plantar hyperkeratosis, and brown pigmentation of the skin (Fig. 79). It may also produce Herpes zoster and carcinomatous lesions. In more acute forms of arsenical poisoning the lesions may be erythematous, scarlatiniform, papular, petechial, vesicular, bullous, or pustular. The arseno-benzol group of remedies is capable of producing a severe type of exfoliative dermatitis (see Syphilis, p. 127).

Atropin and **Belladonna** may produce a vivid red exanthema resembling scarlatina. The eruption is usually itchy, and is associated with dryness of the tongue and fauces, and dilatation of the pupils.



[Photo by Dr. Oram.]

FIG. 79.—Hyperkeratosis due to Arsenic.

Bromide Salts frequently produce eruptions, especially in epileptics who are receiving massive doses—or in young children. The commonest type is *bromide acne*, a papulo-pustular reddish-brown eruption on face and shoulders, which develops slowly and persists for a long time. The lesions arise independently of comedones. Another type of bromide lesion is a papillomatous excrescence (Fig. 80), resembling a condyloma; another form is a tuberos overgrowth of a bluish-brown colour, with a vegetating cauliflower-like surface. Other forms of bromide eruption are erythematous, pustular, urticarial, and bullous lesions. Bromine may be discovered in the urine. The treatment is to stop the administration of the drug. Arsenic internally has been recommended, but it is of doubtful utility. If the condylomatous or tuberos granulomata are slow to disappear, their absorption may be hastened by painting them with tincture of iodine. Burgess believes

that bromine accumulates in the tissues, replacing the chlorine ion. He therefore suggests treatment by the intravenous injection of decinormal saline solution.

Chloral hydrate may produce an erythema—especially a diffuse reddening of the face, associated with a scarlatiniform reddening of the extensor aspect of the limbs. There may be cyanosis of the extremities.

Copaiba may produce a scarlatiniform eruption, which may itch.

Cubebs produces a measly eruption.

Iodine Compounds are common causes of skin eruptions. They manifest themselves especially upon parts of the skin rich in sebaceous glands, *e.g.* the face and shoulders; but no part of the integument is exempt. The lesions may be erythematous, or papular, vesicular or



FIG. 80.—Granulomatous lesions due to Bromine.

even bullous or papulo-pustular, which is perhaps the commonest type. Granulomatous-looking excrescences may also occur (Fig. 81). The papular form may resemble a papular syphilide; the pustular form may suggest acne. But the lesions do not contain spironemata, and arise independently of comedones. Their colour is reddish-brown, tinged with violet or purple. If the lesions ulcerate they leave scars. In some cases the eruption appears soon after the administration of the first dose. In other cases days or weeks may elapse, and the first lesion may appear after the administration has ceased. In the susceptible, or those rendered specially susceptible by intercurrent illness, a small dose may produce severe cutaneous manifestations. Sometimes an iodide eruption will persist long after the administration of the drug has ceased. Fatal cases of iodide poisoning may occur. They are usually associated with a pemphigoid eruption. In all cases of Iodine eruption it is possible to discover iodine in the urine.

Treatment.—Stop all iodides. Arsenic and Belladonna have been suggested as internal remedies, and also Vichy water. Granulomatous masses slow to subside may be painted with iodine.

Mercury administered orally or by injection may produce an erythematous, slightly itching eruption which sometimes desquamates. Applied locally it may set up folliculitis or a desquamating erythema.

Morphia and Opium may produce a scarlatinal eruption which usually itches intensely.

Quinine, and all cinchona preparations, may produce a scarlatinal erythema, most frequent on the neck, though it may spread generally. Papular, vesicular, bullous, and urticarial lesions are also described. A quinine rash generally itches, and as it subsides the affected skin tends to desquamate. Many people exhibit a special idiosyncrasy towards quinine.

Salicylic Acid and the **Salicylates** may produce scarlatiniform or morbilliform and urticarial eruptions.

Silver Nitrate.—In the days when Silver Nitrate was administered over a prolonged period for nervous affections or for uterine hæmorrhages — *Argyria*, a slatey-blue, incurable, and unsightly pigmentation of the skin, was not infrequent. Now it is rarely seen. The condition was due to the deposit of silver salts in the papillary layer of the skin, and affected not only the skin, but the conjunctiva, the lips, and the gums.

General Treatment of Drug Eruptions.

— Stop the drug at once, and endeavour to promote elimination through other channels than the skin. Keep the bowels well opened, and encourage the activity of the kidneys by administration of water, which is the best diuretic, in large quantities.

There are no internal remedies of any special use against drug eruptions. Symptoms, such as itching, inflammation and pustulation, etc., may be treated with soothing powders, lotions, or ointments.

Serum Rash.—It will be convenient to deal here with eruptions produced by the administration of animal sera. These eruptions are most common after subcutaneous injections of the serum, but may follow its administration by the mouth or the bowel. They are seen most frequently after the administration of diphtheria anti-toxic serum, anti-streptococcic serum, etc. That the anti-toxic element in the serum



FIG. 81.—Granulomatous lesions due to Iodide of Potash.

is not the factor responsible for the eruption is proved by the appearance of similar eruptions after the administration of normal horse serum. The phenomenon is an anaphylactic one, and the worst outbreaks of serum eruption are met with in persons who have been sensitised by a previous injection more than twelve days previously. The eruption consists of an intensely itching, and often urticarial, erythema, in discrete patches on the limbs or trunk, or it may become almost universal. On the other hand, it may remain localised to the neighbourhood of the injection. The conjunctiva and the mucous membranes of the mouth may be affected, becoming congested and swollen. The eruption may appear in the course of a few hours after an injection, or be delayed for one or more weeks. The severest cases are in persons rendered hypersensitive by a previous injection.

Treatment is largely by prevention. Increase the coagulability of the blood of a patient before an injection by the administration of calcium salts and parathyroid substance, and if it be necessary to give a second injection of serum, administer it within ten days of the first.

If an eruption breaks out, apply local sedatives; oily calamine lotion with ichthyol (grs. v.- $\bar{3}$ i.) or weak percentages of carbolic acid or alcoholic solution of tar. Lead and opium lotion, or evaporating alcoholic lotions will also give relief.

Enema Rash.—A scarlatiniform, morbilliform or urticarial and erythematous eruption involving chiefly the buttocks, thighs, and lower abdomen, but capable of spreading widely, may follow a soap and water, or even plain water injection into the bowel. The probable cause is the solution by the fluid of toxic elements in the bowel contents, which leads to their absorption, and in the process of elimination they irritate the skin.

Treatment is on the same lines as for the eruptions produced by serum.

Dermatitis

Dermatitis means inflammation of the skin, and is a term of wide connotation which may legitimately be applied to any inflammatory disease of the integument. For instance, all cases of eczema are cases of dermatitis, but not every case of dermatitis presents that series of clinical features which characterise eczema. In the past there has been much confusion in the use of these two terms—and at one time it was the custom to classify as dermatitis those inflammatory affections of the skin due to some known external irritant, and to reserve the title eczema for similar inflammations of unknown cause. The distinction is irrational, and should be abandoned.

Dermatitis may arise from many causes. First, there is a large group of inflammatory affections of the skin due to external irritants of animal, vegetable, or mineral origin grouped together under the title of *Dermatitis venenata*.

In the production of such a dermatitis there is usually a personal idiosyncrasy at work. This susceptibility may be congenital or acquired, and, once acquired, it may be of a very high degree.

The dermatitis may take the form of a simple erythema, or proceed to a papular, vesicular and even pustular stage.

The irritants which may set it up are very numerous. Many of them consist of fine dust and act mechanically, others are chemical agents, which produce chemical reactions.

Bakers' Dermatitis.—This form of dermatitis has become much commoner of recent years, and has assumed considerable medico-legal importance. It should be recognised that not every case of eczema occurring in a baker is a true "Bakers' Dermatitis," due to the dust or liquids with which he is brought into contact in the course of his work. Yet there is little doubt that under the Workmen's Compensation Act more than one baker has received compensation for an eczema from which he would have suffered whether he had been a baker or not. This form of dermatitis is practically unknown in those large bakeries where the dough is mixed by machinery, and where there are adequate facilities for the workers to wash and dry their hands and arms. In some of the smaller bakehouses in the country such facilities are almost non-existent: and the dough is mixed by hand.

The cause of the dermatitis has not yet been agreed upon. The flour dust, the persulphates, and other chemicals used for "improving" the flour, the 3·5 per cent. salt solution with which the flour is mixed (de Jong), the heat of the ovens, the moist dough, the yeast, and even an acarus have been blamed. Except in very rare cases the latter cause may be absolutely excluded. Prosser White, who made a careful series of experiments on himself and his assistants, came to the conclusion that there was usually some individual constitutional susceptibility, and that, without this, bakers' dermatitis would rarely, if ever, occur. There is little doubt that such a susceptibility may be acquired by long contact with whatever noxious agent is responsible for the condition. This enables us to explain cases in which a man who had been a "hand-mixer" for many years without suffering from any skin eruption, suddenly develops a true bakers' dermatitis.

True bakers' dermatitis has a characteristic distribution. It affects the hands, particularly on the dorsum, and near the webs of the fingers, the forearms, more particularly on the ulnar side, and there is almost always a marked outbreak of the eruption on the skin which covers the mass of muscles on the inner side of the forearm just below the elbow joint. The eruption usually also affects the delicate skin in the flexure of the elbow, and as a rule stops about a hand's breadth above the elbow joint. But while this is the usual distribution, the eruption may affect other parts of the body, and involve the face and genitals.

The eruption usually is of an erythemato-papular character, with a tendency to scale. Sometimes there are vesicles; and in a case complicated by scratching, for sometimes the eruption itches intensely,

there may be secondary infection with pus cocci, leading to the formation of crusts, and the clinical picture of an impetiginous eczema.

In making a diagnosis care should be taken to exclude scabies, psoriasis, and lichen planus, and, as already stated, one should remember that not every eczema in a baker is "bakers' dermatitis."

Treatment.—The eruption clears up fairly rapidly if the man leaves his work, and the arms are dressed daily with Lassar's paste. A weak tar wash—a teaspoonful of liquor picis carbonis in half a pint of water, may be dabbed on before applying the paste.

The prognosis as to recovery is good; but it is very doubtful if a man who has suffered from an attack of bakers' dermatitis of any severity, contracted as a "hand-mixer," will ever be able to follow the same employment. He may continue to act as a baker, if he can find a situation in a shop where the mixing is done by machinery; or he may continue to work as a "hand-mixer" if he wears rubber gloves that cover his arms to the elbows. But if he ever mixes dough with the naked hands and arms again, he is almost certain to have a recurrence of his eruption. The sensitisation of the skin produced by one attack of bakers' dermatitis seems to be not only severe but also persistent.

Barbers, laundry-women, and soap-packers may suffer from a dermatitis due to the alkali in the soap.

French-polishers frequently develop dermatitis from the action of the chemicals, *e.g.* turpentine, bichromate of potash, etc., employed in their craft.

Photographers may develop a very troublesome dermatitis from the action of pyrogallie acid and metol. Some skins are particularly susceptible to metol.

Nurses and doctors may develop dermatitis from the use of antiseptics.

Herring-packers often develop dermatitis from the action of the brine.

Sweeps are very prone to a chronic dermatitis of the scrotal skin, which may become warty, and ultimately cancerous ("Chimney-sweep's cancer"). Leitch suggests that the sebaceous secretions may act as a solvent of the soot.

Workers in coal-tar are very liable to a chronic dermatitis of the neck, arms, and scrotum, which may end in carcinoma. Any wart or ulcer developing on the skin of a tar- or pitch-worker should be carefully removed by excision or curetting—and the tissue should be examined microscopically. As a rule epithelioma does not develop in tar-workers under the age of 35 years, and until they have been in contact with the noxious agent for at least ten years (Fig. 82). The best preventive is scrupulous personal cleanliness. Frequent washing with soap and water of the parts exposed to the tar is imperative, and in this daily toilet the scrotum should not be forgotten, as tar-cancer in that region is not uncommon.

I have seen epithelioma develop on the leg in consequence of the prolonged application, over a period of thirty years, of an alcoholic solution of tar used in the treatment of psoriasis. In addition to the epithelioma there were marked changes in the skin closely resembling in appearance the features of a chronic X-ray dermatitis. The patient had never had X-ray treatment.

Mule-Spinners' Cancer.—In 1924 there were fifteen deaths from cancer in "mule-spinners" in Great Britain. In about 80 per cent. the scrotum is affected; in the remainder the face, arm, leg, or other part of body. According to Leitch, 20 per cent. of all deaths from scrotal cancer occur in cotton-spinners. The cause is



[Lent by Dr. Savatard.]

FIG. 82. Epithelioma—two tumours
— in a tar-worker.



[Lent by Dr. Savatard.]

FIG. 83.—Scrotal epithelioma in a
mule-spinner.

chronic irritation from the petroleum oils used for lubrication. The clothing over the scrotal region, upper part of the thighs and lower abdomen, becomes saturated with the oil thrown off from the "bearings" of the "mule." In working with a spinning-mule, the worker has frequently to lean forward over a bar situated about the level of his scrotum. This brings the oil-saturated clothing into intimate contact with the scrotal skin, which is relaxed and softened by the moist heat which prevails in cotton mills. In this way the entrance of the oil into the large sebaceous follicles is made easier. Prevention has been suggested by the use of such oils as sperm oil for lubrication. This would throw a tremendous financial burden on the cotton industry of Lancashire. A better means of prevention would be in-

sistence on absolute personal cleanliness and the wearing of frequently changed, washable, cotton drawers. If these were worn, the rough trousers, stiffened through many days contact with the oil would be prevented from rubbing directly against the scrotum.

These, and there are many others, are all examples of *Trade Dermatitis*.*

Further, dermatitis may be set up by **hair-dyes**, especially those containing paraphenylene-diamene, which is a powerful irritant to the skin, especially if there be any seborrhœa on the scalp, or any personal idiosyncrasy towards it on the part of the patient. This dermatitis is usually severe, and affects the scalp, ears, face, and neck, and may even extend to the shoulders. It is extremely intractable.

Dyed-Fur Dermatitis.—In most cases a partially oxidised derivative of para- or meta-phenylene diamine which has not been completely removed from the outside of the hairs of the fur by thorough washing is the culpable agent.

Roxburgh,† who has made a careful study of fur dermatitis, concludes that dermatitis is produced in patients who are naturally sensitive, or who have been previously sensitised. In most patients “a definite incubation period is required for the production of this sensitiveness”—and the incubation period would seem to be shorter if the fur is worn regularly.

“The sensitiveness to this irritant is usually confined to the parts which have been in contact with it, but in some cases it appears to extend so as to involve other parts of the skin. . . . A few patients appear to be rendered hypersensitive to other substances so that a dermatitis may be evoked later on the damaged areas by otherwise innocuous substances.”

The treatment consists in the removal of the cause. The fur must be discarded. As a local application, linimentum calaminæ, to each ounce of which has been added three grains of ichthyol, usually acts well. Lassar's paste is also of use. A weekly injection of 1-1½ c.c. of intramine (intramuscularly) often helps greatly.

Animal irritants of various kinds, e.g. the sting of a jelly-fish and the bites of insects, are able to set up a dermatitis.

Many **vegetable irritants** may set up dermatitis. *Pyogenic dermatitis* is due to the local action of pus-cocci and their toxins. Many plants can set up dermatitis. Chief of these are, in this country, the primulas, especially *Primula obconica*, and in North America, the *Rhus toxicodendron*.

The researches of Cranston Low have shown that the susceptibility to primula dermatitis is sometimes hereditary, may be acquired, and may consist of a “group sensitisation”—that is to say, other species of primula besides the obconica may set up the dermatitis in those liable

* For a full and admirable account of trade dermatitis of all kinds, see R. Prosser White's “Occupational Affections of the Skin,” 2nd ed. (Messrs. H. K. Lewis, London).

† *British Journal of Dermatology and Syphilis*, March 1925, p. 126.

to it. The eruption, which is usually intensely itchy, varies in type, affects chiefly the face, arms, and hands, and may be erythematous, urticarial, vesicular, or bullous. Daffodils, hyacinths, oleander, and many other plants may cause dermatitis in the susceptible.

All these forms of Dermatitis are best treated by the removal of the cause, or adequate protection against it, and the application of some soothing lotion, such as calamine liniment.

X-ray Dermatitis

The X-rays are capable of giving rise to a serious form of dermatitis. There are two varieties : (1) the Acute, due to one or more massive doses of the rays, and usually divided, for purposes of description, into four degrees ; and (2) the Chronic, due to small but frequently repeated exposures to the rays, sustained by X-ray operators.

Acute X-ray Dermatitis

The B tint of Sabouraud and Noiré's pastille indicates the maximum dose of X-rays which the normal skin is able to receive in one dose without more than a transient erythema. A dosage beyond this, either given at one sitting or administered fractionally without the passage of a sufficient interval, may result in a severe but superficial erythema, which subsides gradually into a brownish pigmentation with slight desquamation. This is *X-ray dermatitis of the first degree*.

In *dermatitis of the second degree*, the erythema appears about the end of a week after exposure ; is more intense, the skin being somewhat swollen ; subsides slowly, is followed by pigmentation and desquamation, and may later result in an atrophic condition of the skin with telangiectases.

In *dermatitis of the third degree* the erythema appears inside a week, is severe, attended by œdema and blistering, and followed by superficial ulceration which is slow to heal.

In *dermatitis of the fourth degree*, the erythema appears usually before the third day. This is followed by necrosis of tissues, with sloughing and most intractable and painful ulceration, which may take many months to heal.

In all these degrees of acute X-ray dermatitis there is loss of hair from the affected part (permanent in the last three), with atrophy and sometimes complete destruction of the glandular elements in the skin.

Treatment.—The best treatment is prevention. Careful dosage should be the rule. The erythema of the dermatitis of the first and second degree may be treated with lead and spirit lotion, calamine lotion and other mild astringents. If ulceration occurs, the ulcers should be kept clean with dilute peroxide of hydrogen lotion and dressed with a thin boric ointment.

Chronic X-ray Dermatitis is insidious and dangerous, as it is

due to repeated small doses, and may terminate in carcinoma. The backs of the fingers and hands are the parts usually affected (Figs. 84, 85), but the face may suffer too. The first symptom is a mild but persistent erythema, followed by brownish pigmentation, and simultaneously



[Lent by Dr. Oram.]

FIG. 85.—Same hand in 1922.
Active X-ray work in interval.

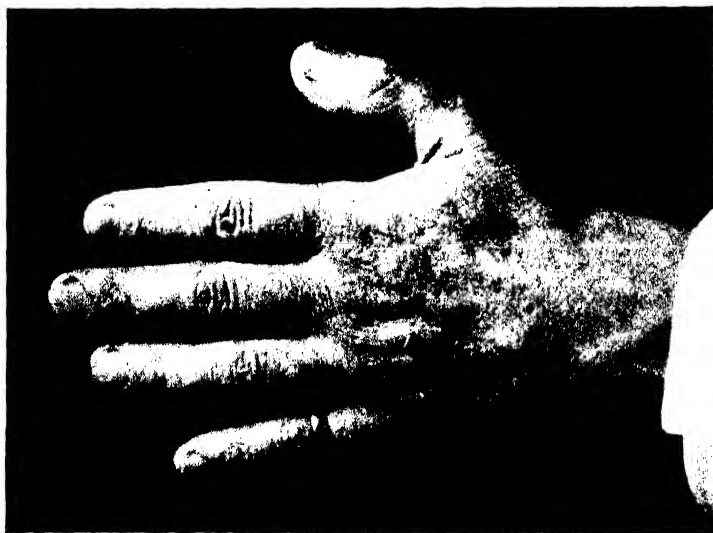


FIG. 84.—Hand of operator in 1916.

Chronic X-ray Dermatitis.

it may be noticed that the lanugo hairs have disappeared. The skin becomes dry and scaly, for atrophic changes begin to occur. Later telangiectases appear, either in clumps or isolated. There is some itching and burning of the hands, especially in cold weather. Later, small

warty elevations of a dirty grey colour appear, which have a tendency to crack at the base and give rise to small ulcers which are often very painful. These X-ray warts may be the starting-point of malignant mischief.

The finger-nails are almost constantly affected. They become thin, friable, striated, opaque, and dirty looking.

The best treatment is prevention, by the adequate protection of the operator.

The skin may be kept supple, if the disease develops, by the use of an emollient ointment at night, *e.g.* equal parts of salicylic acid ointment and glycerole of lead ointment. X-ray warts may be treated with solid CO₂, or with radium. If there is any suspicion of malignancy, surgical intervention should be early. If ulcers occur they should be dressed with mildly astringent lotions or soothing ointments, but a microscopical examination should always be made to determine whether or not they are malignant.

Radium may produce a dermatitis exactly like that produced by X-rays, though it is usually of lesser extent, and a transient erythematous dermatitis, with blistering, may be produced by excessive radiation with *ultra-violet rays*.

Solar Dermatitis

The actinic rays of the sun are capable of producing varying lesions on the skin. Sun-burn or solar erythema is described with the erythemata (p. 229). The brown pigmentation which succeeds the erythema is protective in character. Freckles are dealt with on p. 393. These are the commoner results of exposure to the sun's rays; but a solar dermatitis may take other forms.

H. W. Barber, F. D. Howitt, and F. A. Knott* have made a number of interesting observations on the sensitisation of the skin to light. They divide the "light-sensitive" into two groups—a juvenile group, which early shows intolerance of sunlight, and an adult group, in which the signs of sensitiveness to sunlight develop late. In the juvenile group they found porphyrins in the urine in two cases, and in the fæces in three cases. These porphyrins occurred even on a meat-free diet. In the adult type they never found a porphyrin in the urine; but they frequently found hæmatoporphyrin in the fæces. They conclude that the substance which sensitises the skin to light in the juvenile group is almost always a porphyrin; but in the adult type, in which they often found a lack of hydrochloric acid in the gastric juice, sluggishness of intestinal peristalsis and often an unusual bacterial flora in the fæces, they believe that the sensitising agent is "either a decomposition product of protein or (more probably) a bacterial toxin."

The commonest forms of eruption due to the sun's rays acting on a sensitised skin are:

1. A papulo-vesicular eruption: **summer prurigo or prurigo æstivalis** (Hutchinson). This type occurs in children, usually about

* Guy's Hospital Reports, July 1926.

puberty, though it may begin in adult life, and affects the face and the exposed parts of the hands, arms, and neck, stopping short at the edge of the clothing. The lesions are chiefly tiny red papules, some of which become vesicles; and there is usually considerable itching (Fig. 86). The eruption appears in late spring or early summer and lasts till late autumn. Many of the sufferers are free in the winter; but there is a type of prurigo (*prurigo hiemalis*), indistinguishable from summer prurigo, which breaks out in early winter on exposure to keen damp winds.

Treatment.—Arsenic was recommended by Hutchinson in increasing doses. Locally calamine lotion with ichthyol (grs. iii.– $\bar{3}$ i.) may be used, or the skin may be protected with zinc ointment containing grs. v. of sulphate of quinine in the ounce.



FIG. 86.—Summer prurigo.

2. A vesiculo-bullous eruption, **Hydroa æstivalis**, occurring in children in summer, and recurring year by year till puberty and sometimes beyond for years. It affects the exposed parts, and the lesions are vesicles of varying size which develop on an erythematous base, and run into each other and dry up to form crusts. Sometimes the lesions look like vaccinia, and the condition has been called *hydroa vacciniformis*. When the crusts or scabs separate small scars are left. There is not usually any itching. A moderate eosinophilia is sometimes present.

The condition recurs from infancy to puberty, and may continue into adult life.

Treatment is on the same lines as for Prurigo æstivalis. The scabs may be removed with mild ointments of salicylic acid and resorcin.

There is little doubt that the action of the actinic rays of the sun—and especially reflected sunlight—upon susceptible skins may predispose to cancerous development.



FIG. 87.—Hydroa æstivalis.

Dermatitis artefacta : Dermatitis factitia : self-inflicted eruptions

Self-inflicted lesions on the skin are not uncommon. The patients who present them are usually neurotic or hysterical young women, though men of low mentality, or lacking in moral sense and work-shy, may sometimes exhibit them. The lesions are inflicted with a view to exciting sympathy, or avoiding unpleasant duties, or from a distaste to work, or sometimes, be it said, with a view to receiving compensation from the National or other Insurance Fund.

In my experience, many of these self-inflicted eruptions are first produced after an illness. This fact may indicate that the illness has lowered the vitality of a nervous system already none too robust, or it

may mean that the patient has found the atmosphere of her sick-room so interesting, and the position of invalid so satisfying to her morbid self-consciousness, that she wishes to perpetuate her ascendancy as the chief object of solicitude in the family, and aims at achieving this by mutilating her skin. There may or may not be a neuropathic heredity in these cases. Symptoms of *hysteria major* are often absent, but, as a rule, the sufferer is emotional and badly balanced. It may be possible to discover anæsthetic areas on the skin, and, in my experience, the



FIG. 88.—Dermatitis artefacta.

palatal reflex is almost invariably abolished, and the conjunctival reflex is sluggish or absent. Not a few sufferers from dermatitis artefacta end their days in the lunatic asylum.

Self-inflicted eruptions have, as a rule, certain features in common :—

(1) They are on parts of the body within easy reach of the hands, and are usually few in number.

(2) They are frequently on parts of the body that are normally exposed (Figs. 88, 89).

(3) The lesions are never of a type which fits in with the accepted appearance of any of the lesions of recognised diseases of the skin.

(4) They are frequently regular in outline, and usually have definite edges, the surrounding skin being normal in appearance.

(5) They are polymorphic.

(6) If not caused by brute force, such as pinching, cutting, or scratching, they are produced by means of easily accessible irritants, such as mustard, vinegar, turpentine, ammonia, lunar caustic, carbolic acid, etc. I have seen extensive lesions produced on her face by a servant girl who rubbed saliva into her cheeks with her thumb.

(7) It is sometimes possible, by careful examination, to discover on the lesions particles of the agent that has been used for their production.

It is always a moot point whether anything is to be gained by taxing



FIG. 89.—Self-inflicted lesion. Agent, nitric acid.

such a patient with having produced the lesions. Invariably they deny the accusation, sometimes with a volubility of expression and a forcibleness of phrase that reveal the underlying emotional factors in the case.

Treatment.—Drugs are of little avail. Unmerited credit has sometimes been given to such abominations as asafœtida and the valerians. Threats, scoldings, and a too severe discipline only tend to make matters worse. Ridicule will sometimes act like a charm where reason fails to persuade. Psycho-therapy may be tried. It is often advisable to protect, by means of zinc-gelatine bandages, the parts of the body where the lesions have been produced ; but, above all, when any caustic agent is suspected of being the means employed for the production of the condition, a careful search should be made among the patient's possessions.

These patients show an extraordinary secretiveness and cleverness in concealing their weapons of offence. For this reason it is often advisable to take them into hospital or send them into a nursing home, without giving them a sufficiently long preliminary warning to enable them to secrete the noxious agent which they are using. But, in spite of all precautions, the craft of a woman will sometimes outwit the wisdom of a mere man, even though he be a dermatologist.

CHAPTER XVI

INFLAMMATION OF THE SKIN (*continued*)

Eczema

ECZEMA is by far the most common disease of the skin. It affects both sexes at all ages and of all classes, and no part of the integument is immune from it. Its manifestations are protean, and for long their variety led to confusion and prevented the disease, as seen in its several stages, from being recognised as one and the same.

Hebra was the first to recognise the essential unity of the varied symptom-complex.

Definition.—Eczema is a catarrh or superficial inflammation of the skin, and, in common with all other inflammations, exhibits the four classical symptoms of *rubor* (redness or erythema), *tumor* (swelling or œdema), *calor* (increased heat), and *dolor* (or pain). Though pain in most cases of eczema is trivial, that peculiar pain of the skin, viz. *itching*, is an inseparable and often most distressing symptom of every case of eczema at some stage of its evolution.

Etiology.—There is no one and absolute cause of eczema. Though it is the commonest of all skin diseases, its etiology is obscure.

Roughly, there are three schools of opinion as to its causation.

1. The external irritation school, of which Hebra was the protagonist. In their view injury from without, whether due to mechanical, chemical, or thermal agencies, was the one and only cause of eczema.

2. The bacterial school, led by Unna. They hold that the chief cause of eczema is irritation set up by pyogenic micro-organisms. This opinion has much against it, *e.g.* a newly developed eczema vesicle contains sterile serum. There is little doubt that once an eczema is established, bacterial infection with the ordinary organisms found in the skin, and the special organisms—the *morococcus*, the *bottle-bacillus*, and the *micro-bacillus*—associated with seborrhœa, will do much to modify its course and prolong its duration; but the modern consensus of opinion is that the rôle of micro-organisms in eczema is a secondary one.

3. The internal or humoral school, of which the French are the chief upholders. They believe that the essential cause of eczema is

some deviation from normal in the chemistry of the blood. This doctrine has received additional support from recent works on sensitisation to foreign proteins, and there is little doubt that some cases of eczema are caused, and others are aggravated or kept up, by the absorption from the intestinal tract of non-bacterial or bacterial toxic proteins. Especially is this likely to be an important element in obstinate recurring cases, and in infantile eczema.

All these theories neglect what seems to me the most important factor, viz. the part played by the skin itself. I believe it will ultimately be proved that the cause of eczema is a congenital or acquired vice of the skin which causes it to react with the symptoms of eczema when exposed to irritants of any kind, whether applied externally or brought to it in the blood stream. It is common knowledge that chemical or thermal irritants, which if applied to some skins will produce no visible lesions, will set up an acute and sometimes prolonged attack of eczema if applied to other skins. Further, it is a common thing to find eczema affecting several members of a family, and to discover that this taint has run through several generations. This fact fits in with the view that eczema is in essence dependent upon some hitherto unrecognised structural defect of the skin or upon some abnormal susceptibility to the effect of irritants of any kind.

We meet with a type of structural alteration which predisposes to eczema in cases of ichthyosis. This structural alteration is visible to the naked eye. We see, further, in patients who suffer from varicose veins, how circulatory disturbances, with consequent nutritional changes in the skin, may predispose to eczema. In these two classes of case the underlying factor which produces the increased susceptibility of the skin is obvious; but it is not at all improbable that there are invisible alterations in skin texture, and undiscoverable aberrations from the normal circulation in the skin, which may predispose it to react to irritants in an abnormal way, hence producing all the manifestations of eczema.

CONSTITUTIONAL CONDITIONS PREDISPOSING TO ECZEMA

Eczema may occur in people who are otherwise in perfect health, and there is no alteration in constitution known to physicians which is an inseparable antecedent of eczema; but there are various general conditions which interfere with the nutrition or well-being of the body and of the skin. This interference lowers the power of resistance of the skin to external irritants. Any physician of experience has met with cases in which after, or in association with, some illness a patient has developed an attack of eczema in consequence of some external irritation to which he had been subjected many a time before without prejudicial effect.

The chief general diseases which predispose to eczema are :—

1. **Gout.**—To the lay mind much eczema is of gouty origin, and many patients are quite content to believe that what was gout in their grandfather ("a three-bottle of port man") is eczema (unmerited) in themselves. There is no doubt that patients suffering from those metabolic aberrations which produce gout are particularly prone to react with an eczematous outbreak to any form of external irritation, and patients who suffer from that form of toxæmia which used to be called "suppressed gout"—with its indefinite symptom-complex of headache, malaise, lethargy, constipation, and occasional joint or nerve pains, frequently develop eczema. The truth of the matter is that the blood is loaded with the products of katabolism; the nutrition of the skin is consequently interfered with, and its power to resist irritations of any kind is lowered.

2. **Asthma,** to which the tendency is often hereditary, is frequently associated with eczema. Eczema in one generation may be followed by asthma in the next, and *vice versa*, and sometimes one meets with cases of eczema and asthma, the eczema disappearing to give place to an attack of asthma; the asthma waning to be succeeded by an outbreak on the skin. These cases, which are related, I believe, to prurigo, are distressing alike to the physician and the patient, and have long been regarded as incurable. But the recent light thrown on the etiology of asthma by the study of anaphylaxis leads one to hope that a satisfactory means of curing these unfortunate sufferers may be discovered.

3. **Digestive disturbances**—dyspepsia, constipation, etc. Many sufferers from eczema suffer from gastro-intestinal disturbances. Spiethoff found that in 54 per cent. of all cases of eczema in adults, and in 52 per cent. of all cases of infantile eczema, there were recognisable gastro-intestinal disturbances of various kinds. The disturbances probably act in two ways : (a) by disturbing the vaso-motor system and producing constant or intermittent flushing, especially of the face; or (b) by interfering with the nutrition of the skin. This may be done in two ways, either directly through the action of the substance absorbed upon the skin, or indirectly through the stimulating or depressing action of the intestinal toxin upon one or other of the endocrinous glands. The effect of intestinal toxæmia upon the thyroid gland is now well recognised.

4. **Nervous conditions.**—There is no doubt whatever that some attacks of eczema are very definitely related to nervous shock or nerve overstrain. The intimate relationship that subsists between the skin and the central nervous system should never be forgotten. Glandular and vaso-motor activity are controlled by nerve impulses, and a storm in the nerve centres may easily affect the skin. It is, however, a striking fact that functional nervous disturbances like hysteria, or gross organic diseases of the central nervous system, are not often accompanied by eczema.

5. **Anæmia** is sometimes met with in association with eczema, but whether there is any definitely causal link is unknown.

Eczema in an anæmic girl will improve more rapidly if the anæmia is dealt with at the same time.

6. **Glycosuria,** renal disease, excessive adiposity, do not produce eczema; but they predispose to it by giving rise to local irritations.

7. Further, in some cases there is a marked **hereditary predisposition.**

become vesicles (Fig 91), filled with clear germ-free serum. One

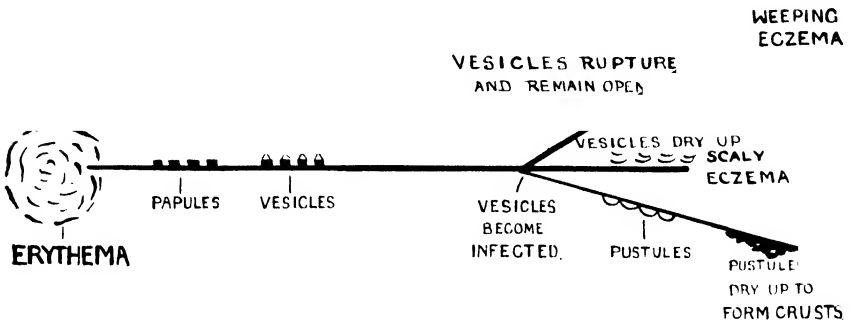


FIG. 90.—Schematic representation of the stages of eczema.

of three things may now happen. (1) The vesicles may dry up with or without rupture, and we get a scaly eczema. (2) The vesicle may



FIG. 91.—Acute vesicular eczema.
Some of the larger vesicles have become pustular.

rupture, and remain open, when we get a weeping eczema ; or (3) the

vesicle may become infected with pus organisms, rupture, dry, and crust, and we get a crusted or purulent eczema.

This schematic representation will enable one to understand why the appearance of an eczema varies with the stage at which one first sees it. Very often in the same patient one may find different eczematous lesions at different stages.

EcZema is essentially an acute-chronic disease; that is to say, its course tends to be prolonged even in the acute stage, and recrudescences are very frequent. Few cases recover under a fortnight; many last for months or even years, either in an acute or subacute form, or in a condition of chronic infiltration.

The disease may occur on any part of the integument, but there is a predilection for the flexor aspect of the limbs, the flexor aspect of joints, and the face. It occurs at all ages and affects all classes and both sexes, in practically equal proportion.

The subjective symptoms are, in the first stage, burning and itching; and, at all stages, a degree of itching that is frequently intolerable.

The itching is attributed to pressure by the



FIG. 92.—Acute eczema.

Note the varying types of lesions in different regions. Erythema on legs; papules and vesicles on thighs; weeping eczema in pubic region.

œdema and small cell infiltration on the delicate nerve-endings in the skin. Practically every case of eczema, at some stage of its course, "weeps," *i.e.* exudes serum or sero-purulent fluid; hence its name (from Greek *ἐκ*=up or out of, and *ζέω*, I boil).

As has been stated, it begins as an erythematous or erythemato-papular eruption; but it is often seen for the first time in the desquamating or scaly stage. I believe that no case of eczema ever reaches this scaly stage without passing through a vesicular stage, which may have been of short duration.

As eczema can best be understood if it is considered in reference to the different parts of the body which it may affect, I shall postpone further consideration of its clinical appearances, dealing with them systematically and regionally on pp. 296 *et seq.*, and then indicating the lines on which it should be treated.

Diagnosis.—This, the commonest of skin diseases, is as a rule easy to diagnose. But there is a tendency on the part of the student and practitioner to label as eczema every skin eruption of whose true character he is uncertain. This lack of accurate diagnosis may lead to failure in treatment. The polymorphism of the eruption and the varying stages in which the disease is met with may occasion difficulty in diagnosis, but the following points should be kept in mind, and they will serve to prevent confusion: (*a*) there is always a history of itching; (*b*) the eruption, as usually met with, is either vesicular or scaly, and there is almost invariably a history of "weeping"; (*c*) the lesions are not sharply limited; (*d*) the eruption is of a superficial character, and does not leave scars.

The conditions from which one must distinguish eczema are:—

1. *Acute dermatitis* set up by local irritation. In this we meet with blisters or pustules, rather than vesicles; the condition tends to clear up more rapidly than eczema, and does not run through a sequence of characteristic stages. It must not, however, be forgotten that, in persons predisposed to eczema, an acute dermatitis due to external irritation may be the starting-point of an attack of true eczema.

2. Acute erythematous eczema of the face must be distinguished from *erysipelas* of the face. In erysipelas, the affected skin is of a deeper and more lively red; the swelling is firmer and more pronounced; there is a definite sharp red border, considerable pain, rise of temperature, preceded by a rigor, and systemic disturbances of varying degree.

3. *Psoriasis*.—Psoriasis has a special predilection for extensor surfaces, rarely itches, and the lesions, sharply limited in contour, have characteristic scales and never weep. Here one should safeguard oneself by stating that psoriasis in the groins or under the breasts in stout women often partakes of the appearance of a moist eczema

—but the presence of characteristic lesions on other parts of the body should afford an adequate clue to a correct diagnosis.

4. *Scabies*.—A case of true uncomplicated scabies should not be confused with eczema, but confusion may arise if the scabies is masked by a secondary eczematous eruption. In all cases of generalised eczema where there is a history of itching, specially severe at night, a careful search should be made for the characteristic burrows of the itch parasite. Unless the scabies is discovered and treated, an eczema associated with that disease will prove extremely intractable to treatment.



FIG. 93.—Scabies masked by a secondary eczema.

5. *Lichen simplex chronicus*, or *lichen simplex circumscriptus*.—This condition, which is frequently met with on the back of the neck, more especially in women, may be confused with a patch of chronic infiltrated eczema. This is not to be wondered at, as an isolated patch of eczema may undergo a process of lichenification, and come exactly to resemble a patch of lichen. Lichen simplex circumscriptus differs, however, on a close examination from an eczematous patch. The initial lesion is a papule, and remains a papule, never becoming transformed into a vesicle. There is no desquamation, or if it occurs it is only slight. The lesion is very chronic, and may last for years. It is definitely circumscribed and itches intensely. (See p. 310)

Prognosis.—The prognosis as to life is very good, though a generalised eczema in old people may be the precursor of death ; or a very extensive and pruriginous eczema in a young child may bring on convulsions and lead to death.

Every case of acute eczema is, or should be, curable ; and it leaves no scars. The duration of an attack can never be foretold, as relapses and recrudescences are the rule, and practically no case of eczema ever progresses without intermission, even under treatment, steadily to a cure. The patient should be warned of this to prevent disappointment. An injudicious change of treatment when a case is doing well—the mere increase in the strength of a lotion or ointment—may be sufficient to provoke a lively recrudescence.

In dealing with eczema in infants, a cautious prognosis should always be given. If the eczema can be cured before dentition begins, teething may have no influence upon it ; but if the eruption has not been cured completely before dentition commences, it is unlikely that the skin disease will be completely eradicated until the first dentition is over. There will be periods of freedom from the eruption, but the cutting of each tooth is likely to provoke a recrudescence.

Treatment.—Eczema can only be dealt with successfully if treatment is varied carefully according to the stage of the disease. For purposes of clearness, it will be best to consider treatment as applied to eczema of three types : (1) acute ; (2) subacute ; (3) chronic.

General.—An acute eczema is an acute inflammation ; therefore the first essential is rest of the affected part, and protection from all kinds of irritation. The general health should be looked into, and any deviation from normal should be treated. Constipation should be avoided, and the administration of a saline aperient every morning is advisable. Diet should be light and easily digested, but nutritious. Bacon and all highly seasoned or preserved foods, pickles, rich sauces, condiments, and everything of that kind should be avoided. Sugar should be taken in strict moderation, coffee, and alcohol in all forms, should be forbidden. Tea may be taken in moderation, freshly infused and weak. It is well to subject a patient to a series of cutaneous protein tests to ascertain, if possible, which foods are definitely harmful for him, and regulate diet accordingly.

Local Treatment.—An acute eczema in the *erythematous-papular stage* is usually associated with a sensation of burning, and feels hot to the touch. This contra-indicates the use of grease. Such an eczema is best treated by the application of inert but protective powders, *e.g.*

R. Pulveris Talci Venet.

Pulveris Zinci Oxidi, āā. p.e.

This should be dusted on freely, and the part then covered with light

gauze. Or one may apply calamine lotion frequently, either dabbing it on and allowing it to dry, or swathing the part in strips of lint thoroughly soaked in it, changing them repeatedly as evaporation takes place.

If the eruption is very extensive and involves the greater part of the body, treatment with calamine lotion becomes somewhat difficult, and there is the danger of chilling the patient. In such a case reliance should be placed upon the free use of powder.

In this stage the internal administration of citrate of potash or antimonial wine sometimes does good. Arsenic should not be given, or given only with great caution, and it must never be forgotten that tar, in all forms, has a markedly irritating effect upon an acute eczema, and should only be used, if used at all, in very great dilution. Probably the novice in the treatment of skin diseases will be well advised if he leaves tar alone at this stage.

An eczema in the *vesicular stage* is best treated with moist applications. First among these is the starch and boric poultice,* which should be changed frequently. If applied cold these poultices have a very soothing effect. They have, however, a marked tendency to macerate the skin, especially if they are covered with oiled-silk protective or kept on too long. They may, with advantage, be replaced after 24 or 36 hours, if the eczema shows signs of abating, by compresses of calamine lotion. Later, when the vesiculation has subsided and the eczematous patch appears quiescent, a cautious change to a paste dressing may be made, *e.g.*—

R. Pulv. Zinci Ox.

Pulv. Amyli, āā. ʒii.

Paraffini Mollis, ʒss.

M.

This should be spread upon strips of lint, and changed night and morning. It is often an advantage to soak the lint in cold water before spreading the paste upon it. This affords the patient a gratifying sense or coolness as the water evaporates from the lint. The paste, which in the above form is inert and simply protective, may be modified in various ways, according to the requirements of the case, *e.g.* if there is much itching or burning, 2 grains of ichthyol may be added to the ounce, or 2 minims of acid carbol. liq. When one makes a change from a lotion to a paste, one should watch closely to see that the grease in the paste does not act as an irritant by preventing the radiation of heat. If an eczema appears to have become worse after twenty-four hours of paste dressings, one should immediately revert to lotions, trying the paste again at a later date.

If the paste proves suitable, and the eczema improves steadily, one may, after a few days, modify it by adding to it an equal bulk of cold

* See Appendix.

cream (Ung. Aquæ Rosæ). If this suits, its application may be continued until recovery is complete.

An eczema, if met with in the *weeping stage*, *i.e.* after the vesicles have ruptured, is best treated, to begin with, with starch and boric poultices. These, by their coldness, produce contraction of the dilated capillaries: prevent the drying up of the exudate in the form of serous scales or purulent crusts, and at the same time, by allowing free drainage, lessen the irritating effect of the discharge. When the active weeping stage is over, one may proceed to calamine compresses. In this stage I have found it of advantage to add gr. i. of sulphur precip. to each ounce of calamine lotion: or to mix the calamine lotion with colloidal sulphur in the following proportions:—

R. Collosol Sulphur,* ʒi.

(for external use)

Lotio. Calaminæ, ad ʒviii.

Or a lead and spirit lotion may be employed, *e.g.*—

R. Liq. Plumbi Subacetatis, ʒi.

Spiritus Vini Rectificati, ʒss.

Aq. distillatæ, ad ʒx.

This is at once astringent and cooling. It should be applied on strips of lint, which should be moistened frequently.

Thereafter the treatment should follow the same lines as already indicated—passing from lotion to paste, and from paste to mild ointment, *e.g.*—

R. Lanolini, ʒi.

Ung. Boracis, ʒiii.

Paraffin. mollis, ʒss.

M.

Never forget that mild soothing treatment offers the best hope of success in all cases of acute eczema, whatever the stage at which one meets with it.

If an acute eczema is not met with until it has reached the *scaly stage*, one may begin its treatment with a mild ointment, such as—

R. Acidi Salicylici, grs. v.

Lanolini, ʒi.

Vaselini, ad ʒi.

M.

If this is tolerated, one may add ichthyol grs. v.—ʒi. of ointment, and/or Liquor Carbonis Detergens, min. v.—ʒi.

By a *subacute eczema* one understands either an eczema which has lasted for several weeks, the more acute phenomena having subsided, or one in which there are repeated recrudescences of more or less

* This is a 5 per cent. suspension of colloidal sulphur,

acute symptoms, without that infiltration of the skin and indolent character which are the features of the chronic stage.

In subacute eczema the treatment may be of a more stimulating character. Weak tar lotions, *e.g.* \mathfrak{Z} i. of Liquor Carbonis Detergens or Liquor Picis Carbonis in a pint of water, may be dabbed on frequently and followed by the application of a modified Lassar's paste, such as—

R. Liquor Picis Carbonis, min. x.
Acidi Salicylici, grs. x.
Pulv. Amyli.
Pulv. Zinci. Ox., āā. \mathfrak{Z} ii.
Vasellini vel Adipis Benzoati, \mathfrak{Z} ss.

Sometimes a patch of subacute eczema, slightly raised, tawny-red in colour, with oozing points, frequent serous scales, and considerable itching may be caused to disappear rapidly by the following procedure, which one should carry out oneself rather than entrust to the patient.

With a piece of lint or a pledget of cotton-wool moistened with pure Liquor Carbonis Detergens brush over the whole lesion. Immediately afterwards rub on some Lassar's paste, which will prevent the tar producing vesication. Then bind the part up with lint smeared with Lassar's paste. The lesion will often disappear with surprising rapidity.

Chronic eczema is divided into two chief varieties: the chronic dry scaly type, and the chronic moist type.

In the chronic dry scaly type, stimulating treatment is indicated. Ointments or pastes containing tar of various kinds (*e.g.* Liquor Carbonis Detergens, Oleum Rusci, Oleum Cadini), min. x. in an ounce of Lassar's paste, or resorcin or sulphur, grs. x. to the ounce are indicated.

The chronic patch of eczema which has undergone lichenification may be dealt with by the daily application of pure Liquor Carbonis Detergens, followed by massage with this ointment:

R. Ung. Hyd. Nit. dil., \mathfrak{Z} i.
Ung. Acid Salicyl., ad \mathfrak{Z} i.
M.

In the chronic moist type a lotion of collosol sulphur (1-6) often gives good results, or a $\frac{1}{2}$ -1 per cent. solution of silver nitrate dabbed on frequently and allowed to dry, will rapidly convert a weak-looking, red, weeping surface into a dry one, with the gradual subsidence of any subjective symptoms. When the discharge has thus been dried up, one may proceed to apply Lassar's paste—modified according to the indications present—and from that proceed to a bland ointment.

In the chronic scaly form of eczema, the internal administration of arsenic, preferably in the form of Donovan's solution, sometimes does good. It should not, however, be given in the moist form of chronic

eczema. Potassium iodide may also be given in the dry scaly type of case, but not in the moist one.

In the moist one, calcium lactate (grs. xv.—t.d.s.), or collosol sulphur (℥ii.—t.d.s.) may be prescribed.

A satisfactory working knowledge of eczema and its treatment can only be acquired if we consider it regionally, so at the risk of repetition I propose to do so now, confident that this will be of considerable service to the harassed practitioner who has to deal with the cases.

Scalp.—Eczema of the scalp occurs in two forms, the moist and the dry. Moist eczema of the scalp is the common and rebellious form of the disease met with in infants. It may begin in the early weeks of life, and is, I believe, often directly traceable to natural secretions allowed to accumulate on the scalp, where they offer a suitable nidus for the growth of micro-organisms, whose bye-products are highly irritating; or to injudicious attempts to remove these secretions with strong soaps and unwise friction. The eczema may be confined to a patch or two, or may involve the whole scalp, which may be crusted (*crusta lactea*) or œdematous, and oozes copiously a thin irritating serum with a faintly unpleasant odour. The itching is intense, and the unfortunate infant makes constant efforts to scratch its scalp, or if this is prevented seeks relief by rolling its head from side to side, crying the while, or rubbing its head against the arm or chest of its nurse, or boring it into its pillow. Except during sleep—which is greatly interfered with—the intense itching would seem to be constant, with paroxysmal exacerbations.

The treatment of this condition is extremely difficult. General treatment must be instituted. A careful investigation should be made as to the child's diet—the amount, frequency, and composition of the meals. Protein sensitisation tests will often give a clue to dietetic errors which should be remedied. Constipation must be avoided.

Locally I have had good results from the application of compresses of 1–6000 or 1–10,000 perchloride of mercury. The risk of absorption of mercury is negligible. The compresses should not be covered with gutta-percha tissue, and should be changed frequently. As the amount of discharge and the irritation begin to subside, one may proceed to apply silver nitrate in a lotion of $\frac{1}{4}$ – $\frac{1}{2}$ per cent., or Collosol Argentum (1–2000). When the discharge has completely dried up and the œdema has gone, and the scalp has become scaly, I apply the following ointment :—

R. Unguenti Hydrargyri Nit. diluti, ℥i.

Paraffin. Mollis, ad ℥ii.

M.

If this is well tolerated it may be continued, its strength being gradually increased. If it is desired to make a change, a weak (grs. v.

or x.- $\bar{3}$ i.) ointment of salicylic acid may be employed. If the itching continues during the scaly stage, the scalp may be sponged twice daily with a weak tar lotion, *e.g.* *Liquor Carbonis Detergens*, $\bar{3}$ i., *Aquæ*, ad $\bar{3}$ xii. If need be, small doses of sodium or potassium bromide may be administered to lessen the nervous exhaustion from itching. A similar



FIG. 94.—Acute eczema of the scalp.
Note the involvement of ear and face.

condition of acute eczema of the scalp may be met with in adults of either sex, and it is often complicated by seborrhœa.

Unless the patient is a woman, the hair should be cut short, lest it interfere with the proper application of remedies. Here again bichloride of mercury lotions (1-2000, 1-4000) give good results ; and I have had results little short of startling, from the application of compresses of collosol sulphur (1-8) in cases where the seborrhœic element was marked. When the moist stage has subsided, and a dry scaly condition

remains, a thin ointment containing 10 minims of *Liquor Picis Carb.* and/or 10 grs. of *Acidi Salicylici* may be prescribed. The diluted ointment of *Ung. Hyd. Nit. Dil.* already mentioned may also be used with advantage, and, if thought advisable, a little tar in the form of *Liquor Picis Carbonis* or *Ol. Cadini* may be added.

Eczema of the External Ear.—This begins either as a direct extension from an attack of eczema of the scalp, or as an intertrigo from the contact of the two skin surfaces of the ear and mastoid, retention of secretion leading to maceration of the skin with the formation of one or more deep and painful cracks at the posterior line of junction between the ear and the skull. Through these cracks there is little doubt that a micro-organismal infection occurs. Or eczema of the external ear may be a continuation outwards of an eczema of the external auditory meatus.

In a severe case, the whole external ear becomes swollen ; it itches and burns, and in consequence of its cartilaginous skeleton and the scantiness and toughness of the overlying integument, any swelling is accompanied by considerable pain. The natural folds of the skin of the ear are somewhat obliterated by the intensity of the swelling, and the rupture of vesicles may lead to the drying on of serous scales or sero-purulent crusts.

Treatment.—A saline aperient every morning. Locally, starch and boracic poultices frequently changed give great comfort. After their use one may proceed to apply weak boric compresses, or compresses of 1-4000 perchloride of mercury. The cracks behind the ear should be painted, as soon as the œdema begins to subside, with a 5-10 per cent. solution of nitrate of silver. This will cause the formation of an albumino-silver coagulum, which will prevent the further invasion of micro-organisms. At a later stage Lassar's paste with 2 grs. of sulphur in the ounce may be applied. Care should be taken that the paste does not accumulate behind the auricle, where it may interfere with healing. When the attack has subsided, the patient should be instructed to apply salicylic ointment every night for some weeks.

Eczema of the external auditory meatus, if present, should be treated at the same time. If the eczema affecting the outer ear is a direct extension, it will not get better until the mischief in the canal is cured. If it is a moist eczema, the meatus should be plugged gently with absorbent cotton-wool soaked in weak boric or perchloride of mercury lotion. When the moisture dries up—or from the beginning, if it is a dry and scaly eczema—this ointment should be inserted on a plug of wool every night :

R. *Ung. Hyd. Nit. Dil.*, ℥i.
Ung. Acid Salicyl., ℥iii.
Paraffini Mollis, ad ℥i.

On no account should dry powders, such as starch and boric, be blown into a moist, eczematous external auditory meatus. The powder mixes with the secretion, forming a cement-like mass which is capable of damaging the lining of the meatus. Frequently eczema of the external auditory meatus is complicated by boils. For these nothing is better than a course of injections of butyrate of manganese.

Eczema of the face in the adult may be limited to one or more discrete patches, or it may involve the whole of the skin of the face, and spread downwards to the neck. It occurs in the form of



FIG. 95.—Chronic eczema of the face. Note the infiltration of tissues.

diffuse inflamed red patches, sometimes scaly, sometimes studded with vesicles, and often crusted. The crusts are yellowish in colour, but if there has been much scratching, there may be blood mixed with the pus, and the crusts are of a dark red. In the localised cases, the nose and the parts adjacent to the eyes may escape ; but if the attack is not localised, the nose and eyelids participate, and the latter become enormously swollen, red, and sometimes exhibit deep cracks.

There is great heat and itching in these cases, and the enormously swollen and red face may cause one to think of erysipelas. Sometimes, in adults, and very often in children, an acute eczema of the face would seem to be a direct extension downwards of an acute eczema of the scalp.

In infants, eczema of the face usually covers the whole countenance, except the nose and the lips. The eruption is a vivid red. Sometimes it is covered with fine scales, sometimes it is vesicular ; often it is moist, sometimes it is crusted ; or all four conditions may be met with at one time in the same case. As in the case of acute eczema of the scalp in infants, there is intense itching.

The treatment of this condition in the adult may be summarised as follows : In the acute œdematous stage, use lotions of calamine, or calamine lotion with min. v. Liq. Plumbi Subacetatis added to each ounce ; or lactate of lead lotion produced by adding \mathfrak{z} i. of Liq. Plumbi Subacetatis to \mathfrak{z} ix. of milk ; or weak (1-4000) lotions of bichloride of mercury. These lotions may be applied either by dabbing them on frequently, or by means of a lint mask, kept moist continually. When the redness and œdema, the heat, and itching have subsided—but not till then—apply Lassar's paste with Ung. Aquæ Rosæ in equal parts. Be on the look-out for a recrudescence when you change from a lotion to a paste, and, if one should occur, return unhesitatingly to the last lotion from which the patient derived benefit.

A patient who has had an acute eczema of the face must be cautioned against exposure to cold winds (*e.g.* in an open motor car) or bright sunlight. Either of these irritants may bring on another attack. If at any time such exposure has been unavoidable, he should apply at the earliest possible moment some calamine lotion to his face.

The treatment of eczema of the face *in infants* is always difficult, and often disappointing. So many factors tend to aggravate it—the irritation of an erupting tooth ; a little indigestion ; an attack of constipation ; a breath of cold wind ; the warmth of a hot fire. As far as possible all contributory causes must be eliminated, then one may proceed as follows :—

If the face is crusted, or hot and swollen, apply starch and boric poultices, keeping them in place with a light knitted mask. Change these frequently. When the swelling, redness, and oozing have subsided, apply calamine compresses, and at a later stage, either Lassar's paste or zinc ointment, with grs. ii. of ichthyol added to each ounce.

If the eruption is very local and there is not much œdema, one may begin by applying $\frac{1}{4}$ – $\frac{1}{2}$ per cent. silver nitrate lotion, *i.e.* approximately 1-2 grains in an ounce of distilled water. This should be dabbed on and allowed to dry, and on the top of it one may dab a little calamine lotion.

If the patch is scaly, or if it has been reduced by treatment from the œdematous stage to the scaly one, one may use this ointment :

Rx. Acidi Salicyl., grs. v.
 Ichthyol, grs. ii.
 Ung. Zinci Oxidi.
 Ung. Aq. Rosæ, āā. \mathfrak{z} ss.
 M.

If an ointment does not suit, get back at once to a lotion, and before reverting to the ointment try Lotio Calaminæ Oleosa, with or without grs. ii. of ichthyol to the ounce ; or this cream :

R. Pulv. Calaminæ, ℥i.
Pulv. Zinci Ox., ℥i.
Lanolini, ℥iii.
Aq. Calcis, ad ℥i.

This may be applied frequently.

As internal remedies in infantile eczema of the face, citrate of potash in iii.-gr. doses, or collosol sulphur in doses of 10 minims, thrice daily may be tried. If it is found necessary to administer bromides on account of the intense irritation, they should be given with caution, as the risk of producing a bromide rash is considerable if the child has an eczematous skin. See that the bowels move regularly, and if there are any traces of undigested food modify the diet accordingly.

There is a popular superstition that it is dangerous to cure a child's eczema, or, as the phrase goes, "to drive it in." There is this wisdom in the popular belief, and no more. An eczema will disappear suddenly and completely on the development of some other acute disease, *e.g.* measles or pneumonia, and the wrongly described "driven-in" eczema is held responsible for the production of the complication. It is really the supervening malady which has influenced the eczema, and not the disappearance of the eczema which has precipitated the new affection.

Eczema of the Armpits.—This is usually met with in adults, and is generally due to or aggravated by excessive secretion of sebum and perspiration by the large glands situated in the axillæ. It is, therefore, likely to be complicated by the activity of the organisms associated with seborrhœa. If seen early it is usually represented by one or several fawn-coloured, slightly raised and oozing lesions. In this stage a rapid cure may be effected by the free application of collosol sulphur, followed by an inert dusting powder.

Sometimes, however, in patients with severe eczema elsewhere, who have little resistance, the whole of the skin in the axillæ may become macerated and shed, leaving a raw oozing surface which speedily becomes infected with pus.

Treatment.—Clean up with boric and starch poultices ; proceed to compresses of 1-4000 hyd. bichloride, and from that either to 1 per cent. silver nitrate lotion and a dusting powder, or to collosol sulphur lotion 1 per cent. Clip or shave the hair in the armpits, and keep it short till a cure is effected, and during and after treatment keep the opposed skin surfaces separated.

Eczema of the Nipples in Women.—Eczema of the nipples affects the areola, is generally crusted in character, and under the crusts one discovers a red weeping surface. It is most common in the pregnant multipara, or in the nursing mother. In the former the oozing of milk from the nipple, and its decomposition as it lies on the areola, is the likely cause; in the latter, the milk plus the irritation of suckling are responsible.

In every case of eczema of the nipples, look for traces of scabies elsewhere on the body, and, if present, treat it. Do not conclude off-hand that every eczema round the nipple is a commencing case of Paget's disease. For differential diagnosis, see p. 413.

The treatment of eczema of the nipple is difficult if suckling is still in progress. Wansbrough's lead nipple shields sometimes effect a cure.

If suckling is over it may be treated with starch and boric poultices to remove the crusts, and the subsequent application of 1 per cent. silver nitrate solution; or with Lassar's paste, containing grs. x. precipitated sulphur in the ounce; or with Lassar's paste and pyrogallic acid grs. v. in an ounce. Paste adhering after one dressing should be cleaned off with olive oil before the next application is made.

Eczema below the breasts, usually met with in obese women, is due to the decomposition of secretions retained between the opposing skin surfaces. Sooner or later one or more long deep fissures develop in the angle where the mammary skin runs into the skin of the chest wall. As in the case of eczema behind the ears these cracks allow micro-organisms to enter. The whole of the skin in contact, on breast and chest wall and upper abdomen, may become macerated and the horny layer may separate, leaving a red, raw, oozing surface, bordered by a slightly raised cigarette-paper cuticle.

Treatment should be directed to (1) cleansing, (2) separation of the skin surfaces in contact, (3) the promotion of healing. The first object may be attained by the use of boric compresses, or starch and boracic poultices. The second, by the application, on strips of lint, of calamine lotion, to which Sulph. Precip. (grs. ii- $\bar{3}$ i. of lotion) may be added. The fissures may be painted with 5 per cent. solution of silver nitrate, and restitution of normal skin may be promoted by applications, on lint, of

R. Acid Pyrogallici, grs. v.

Pulv. Amyli.

Pulv. Zinci Ox., $\bar{a}\bar{a}$. $\bar{3}$ ii.

Paraffin. Mollis, $\bar{3}$ ss.

M.

Treatment should be persevered with until the cure is complete, for this form of eczema tends to relapse readily. When a cure has been obtained, the patient should be instructed as to the need of

frequent cleansing with soap and water of the skin under the breasts with a view to removing secretions. After washing, a mineral dusting powder, such as Fuller's earth, should be used freely.

The same line of treatment may be followed for the intertriginous eczema met with in the groins and between the thighs and the scrotum.

Eczema round the Anus (Fig. 96).—Examine for constipation, hæmorrhoids, thread-worms, and diabetes. If one of these conditions is found, deal with it. The treatment of the eczema, which is often complicated by intense itching, consists in scrupulous cleanliness.



FIG. 96.—Chronic eczema round the anus.

Note the extension forward to vulva, and backward towards sacrum. Note also the secondary involvement of buttocks through scratching and pus inoculation.

The anus and surrounding skin should be bathed with soap and water after each evacuation, and afterwards sponged with 1-4000 bichloride of mercury solution. This is not only antiseptic but antipruritic. Thereafter the contiguous skin surfaces should be kept apart by pieces of lint soaked in calamine lotion, and frequently changed. Frequently, in association with eczema round the anus, one finds an extension of the disease along the internatal cleft, towards the sacrum, with painful cracking of the skin. These cracks should be treated by painting every other day with 5-10 per cent. silver nitrate solution. As

a rule, eczema round the anus is not improved by ointments, but when the more acute stage is subsiding I have found the following application of use :—

R. Liquor Carbonis Detergens, min. x.
 Acid. Carbol. Liquidi, min. v.
 Ung. Hyd. Nit. Dil., ʒi.
 Ung. Acidi Salicylici, ʒii.
 Paraffini Mollis, ad ʒi.
 M.

This may be applied night and morning, or even more frequently, after a preliminary cleansing with 1-4000 bichloride lotion.

Bockhart * recommends the following treatment for chronic eczema round the anus with hypertrophic changes. Alcohol is applied to the part three or four times daily ; then a lotion of equal parts by weight of zinc oxide, talc, glycerine, and water till the itching and inflammation cease ; and later a 5 per cent. lotion of Liquor Picis Carbonis is applied frequently.

In cases of chronic eczema round the anus, where, owing to constant scratching the skin has been converted into a kind of wash-leather integument, thickened, greyish-white in colour, and ridged, with furrows radiating outwards from the anal orifice, treatment requires to be more heroic. Under a local anæsthetic (novocain for preference) the affected parts are rubbed over vigorously with Liquor Potassæ, and thoroughly curetted with a skin-curette. Afterwards the raw surface is dressed alternately with weak bichloride lotion or boric-lanolin ointment till healing occurs ; or the parts may be treated with acetone-CO₂ snow—or with a full pastille dose of X-rays, which may be repeated after three weeks.

Milder methods of treatment that sometimes give good results in chronic eczema round the anus are the morning and evening application of 1-2 per cent. pyrogallic acid and zinc paste, or the use of a 1-2 per cent. chrysarobin paste.

Eczema of the Vulva.—This most distressing condition is often associated with uterine displacements (which should be dealt with by a gynecologist), or with leucorrhœa ; or, where the inner aspect of the labia is converted into an eroded raw surface, red and tumid, suggesting a piece of raw beefsteak, with glycosuria.

In all cases of acute eczema of the vulva, the patient should be put to bed. The first object is complete cleanliness. Sitz baths of normal saline at a temperature of 105°-110° F. give great relief ; or if this cannot be carried out, gentle sponging with the same solution. If the itching is intense, the parts may also be sponged with 1-6000 bichloride

* *Archiv. f. Dermat. u. Syph.*, 129, Pt. 2, 1921.

lotion. The surfaces should be kept separate with lint soaked in a thin calamine lotion. As the swelling subsides, any eroded points or fissures may be touched with 1-2 per cent. silver nitrate solution every second day, but care should be taken not to apply this remedy too soon, or one may light up the mischief again. Greasy applications, through their tendency to prevent the radiation of heat, are usually inadvisable in eczema of the vulva ; but when the more acute stage is over, the patient may derive great comfort from the application, on pieces of gauze, of *Lotio Calaminæ Oleosa*.

When all the swelling has subsided, and the redness and itching are settling down, an ointment of ichthyol and zinc (grs. v.- $\bar{3}$ i.) may be applied ; and to prevent recurrences, the parts should be kept scrupulously clean by bathing night and morning with normal saline or 1-6000 bichloride solution. Thereafter, a dusting powder of

R. Camphor, grs. x.
Spiritus Vini Rect., q.s.
Pulveris Talci, $\bar{3}$ i.

may be used with advantage.

In all cases of eczema of the vulva, the condition of the bowels should be attended to ; hæmorrhoids, thread-worms, fissures round the anus, etc., should be dealt with, and the urine should be rendered and kept alkaline by large doses of citrate of potash.

Eczema of the Legs.—Eczema of the legs in adults is almost invariably associated with some disturbance of the venous return (Fig. 97). The changes in the skin are, to a large extent, dependent upon the condition of venous stasis ; consequently the type of eczema usually met with on the legs is the chronic one, characterised by intense itching, infiltration, thickening and discoloration—livid or brown pigmentation—of the skin, with a tendency to ulceration. Treatment varies according to the clinical appearances. In the chronic infiltrated condition, with marked hyperkeratosis and hyperplasia, treatment should be of a stimulating nature. Paint the affected part with pure *Liquor Carbonis Detergens*, and then rub in this ointment :

R. *Liquor Carbonis Detergens*, min. x.
Ung. Hyd. Nit. Dil., $\bar{3}$ i.
Ung. Acid. Salicyl., $\bar{3}$ iii.
Ung. Glycerini Plumbi Sabacet., ad $\bar{3}$ i.
M.

Or the part may be painted daily with a 5 per cent. solution of silver nitrate in *Spiritus Etheris Nitrosi*, the application being followed by Lassar's paste.

The sharply defined patch of chronic thickened eczema on the lower leg, which presents features of resemblance to an isolated patch of psoriasis, may be treated with a 1 per cent. pyrogallic acid paste, or with a 1 per cent. chrysarobin paste.

An acute eczematous outbreak on a leg where the veins are varicose must be treated cautiously. Rest in bed is advisable. Boric compresses, followed by calamine compresses, and then by dressings of Lassar's paste, or zinc paste with ichthyol (grs. v.- $\bar{3}$ i.) or pyrogallic acid (grs. ii.- $\bar{3}$ i.), should be applied. Overactive treatment may make the condition much worse.



FIG. 97.—Varicose eczema.

Where the patient cannot lie up, ambulatory treatment may be carried out successfully by the use of Unna's zinc gelatine. This may be painted upon the limb either pure, or with the addition of grs. x. of ichthyol to the ounce, and allowed to dry on like a varnish, light broad bandages being applied on top, and painted over in turn with the zinc gelatine; or the eczematous area may be dressed with Lassar's paste, or any other suitable medicament, and a gamgee dressing kept in place

by zinc-gelatine bandages may be applied from the ankle to the knee. This is an excellent form of dressing, as it gives to the varicose veins that elastic support, without undue constriction, which is necessary for the effective maintenance of the return circulation; and it aids in the cure of the eczema by striking at the root cause. To begin with, the dressing will require to be changed every two or three days, but

PLATE XIX



CHRONIC ECZEMA OF PALMS

Note the thickened skin and the fissuring.

later, as the discharge lessens, an interval of 10-14 days may be allowed to elapse between changes.

Eczema of the Hands and Feet.—Acute eczema is characterised by swelling of the hands and feet, fingers and toes, with the formation of vesicles and bullæ, which rapidly become purulent.

All bullæ or pustules should be opened, the parts immersed for 15-20 minutes in a warm boracic bath, and then dressed with boric lotion. This should be repeated night and morning. As the swelling subsides, the boric lotion dressings may be replaced by calamine compresses. Later weak tar baths, $\bar{\text{ʒ}}$ i. of Liquor Carbonis Detergens in two pints of water, may be used, followed by the application of dressings of Lassar's paste with grs. v. of ichthyol to the ounce. As restitution proceeds, the tar baths may be gradually strengthened, but they should never exceed $\bar{\text{ʒ}}$ i. $\bar{\text{ʒ}}$ x. in strength, and the paste may be replaced by this ointment :

R. Ichthyol, grs. iii.
 Ung. Acid. Salicyl., $\bar{\text{ʒ}}$ ss.
 Ung. Zinci Ox., $\bar{\text{ʒ}}$ ss.
 M.

As is always advisable in treating eczema, great caution must be exercised in changing from one form of treatment to another.

To avoid further attacks of eczema of the hands and feet, it is advisable, during cold weather, to be very particular about drying after washing, and the nightly application of an emollient, such as glycerine and rose water, or Ung. Acidi Salicylici and Ung. Glycerini Plumbi Subacet. in equal parts, will often prevent a recurrence.

The Chronic Variety of Eczema of the Hands and Feet (Plate XIX, and Figs. 98, 99, 100), with marked hyperkeratosis and scaling and fissuring of the palms, backs of hands, knuckles, heels, and soles, requires stimulating treatment. For this condition there is nothing better than tar, beginning with low proportions, and increasing the strength gradually. Deep fissures may be painted with 2-10 per cent. silver nitrate spirit lotion. A suitable ointment is—

R. Ung. Picis Liquidi, $\bar{\text{ʒ}}$ i.
 Ung. Glycerini Plumbi Subacet., ad $\bar{\text{ʒ}}$ i.

The proportion of tar may be increased, and if thought advisable 10-20 grs. of Acid. Salicyl. may be added to the above ointment. For very much thickened epidermis over the heels or on the palms, dressings with 10-20 per cent. salicylic plaster are good. Often excellent results are obtained by the application of a pastille dose of X-rays ; and for an isolated chronically thickened patch of eczema on the back of the hand, or on the feet, an application of CO₂ snow will often yield most satisfactory results.

There is an acute variety of eczema between the toes, due in the first instance, probably, to the irritation of decomposing secretions, which is common in summer, and tends to recur. For this, scrupulous cleanliness, with the use of a dusting powder of Acid. Salicyl. and talc (ʒi.-ʒi.) is the best prophylactic. An attack is best treated with boric compresses, followed by calamine compresses, and then by Lassar's paste, to which Sulph. Precip. in the proportion of grs. v.-ʒi. may be added. In applying dressings, dress each toe separately. After an attack of eczema of this kind, there is often a condition of coarse scaling left between the toes, which spreads on to the sole of the

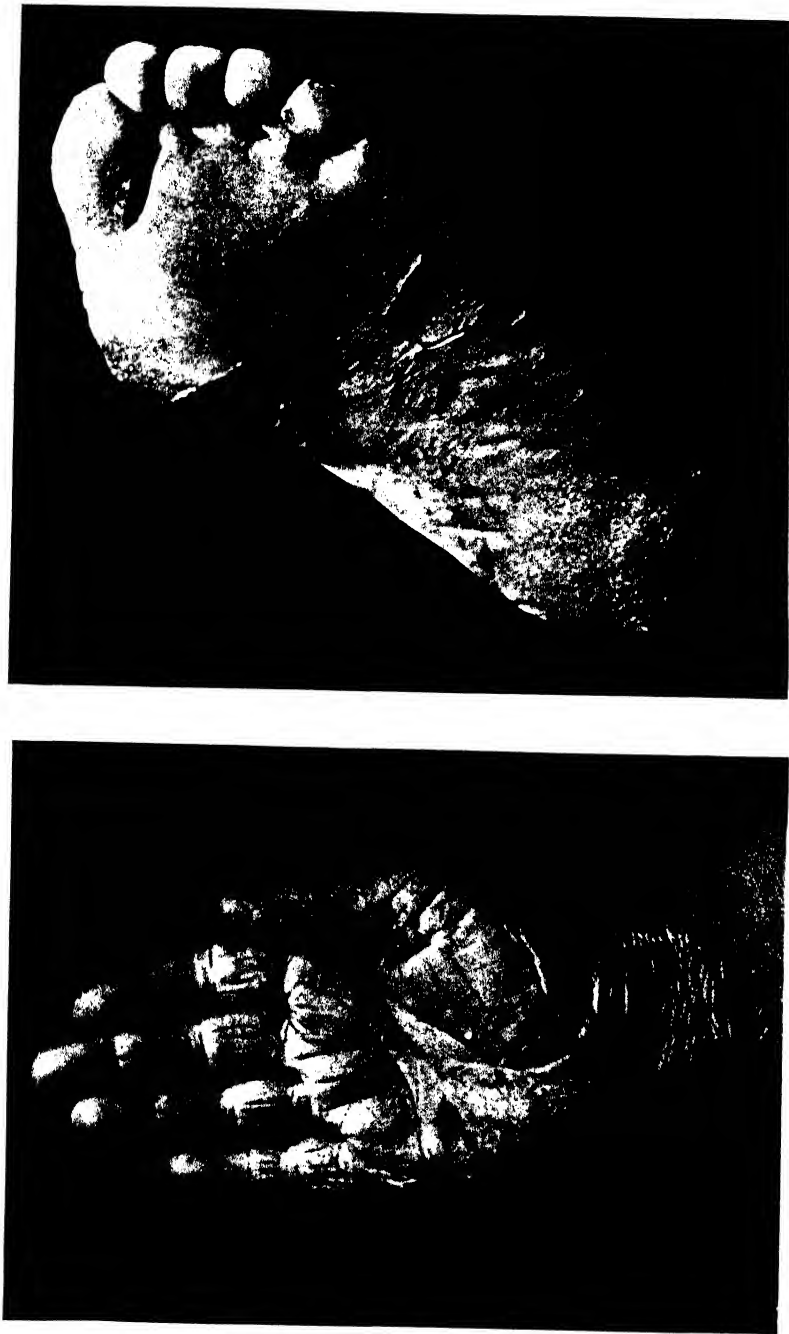


FIG. 98.—Chronic eczema.

foot. For this condition, ichthyol grs. xx. combined with half an ounce each of salicylic ointment and zinc ointment is excellent. The deep and painful fissures between the toes that may be met with associated with this condition, should be touched with 1-5 per cent. silver nitrate solution occasionally.

In all conditions of scaliness between the toes, and on the soles or dorsum of the feet near the toes, one should be on the alert for ring-worm, and as a routine practice, examine the scales for the trichophyton. The observations of Whitfield have established the wisdom of this procedure.

Success in the treatment of eczema requires patience alike on the



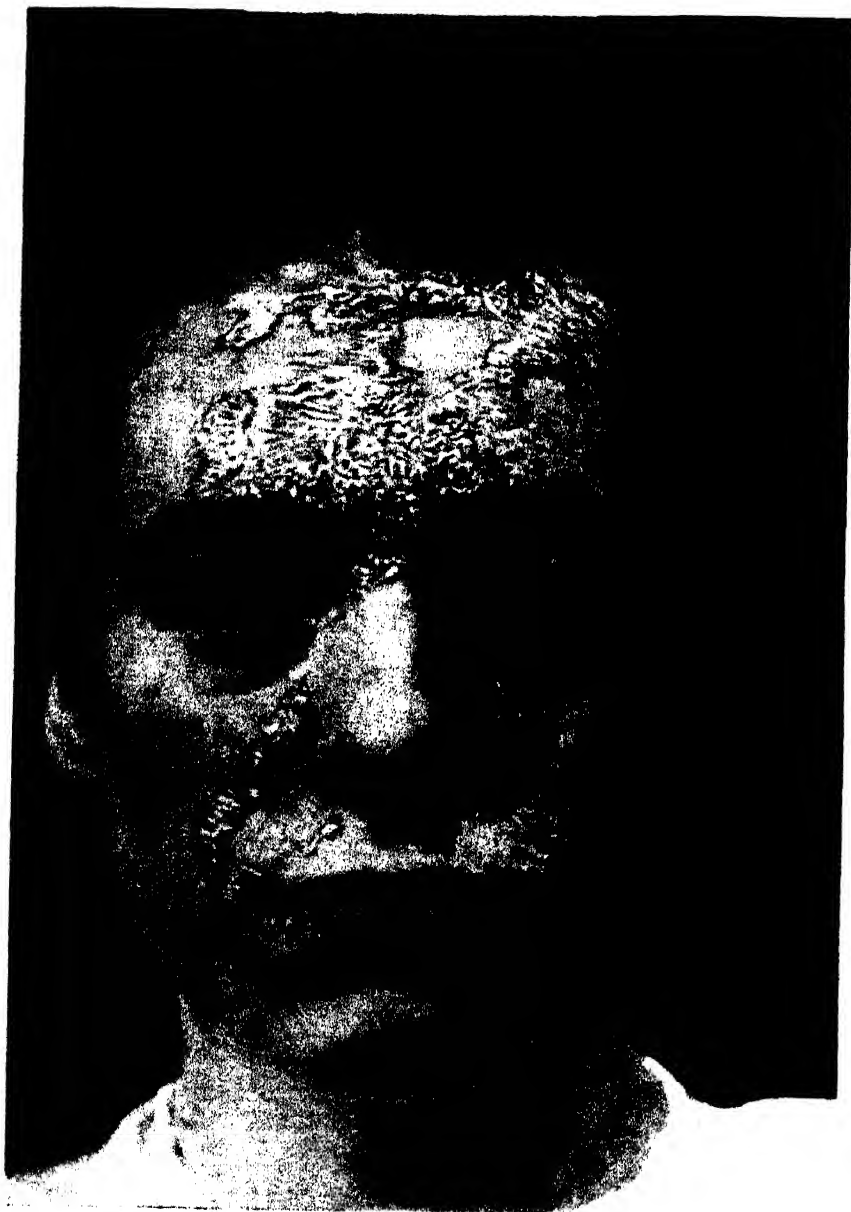
FIGS. 99 AND 100.—Chronic eczema of soles and palms. Note the deep fissuring.

part of the sufferer and the physician. There is no royal road to the goal, and no routine treatment. Each case must be treated on its merits, and the physician must always be on the alert for sudden changes in the lesions, demanding corresponding modifications in treatment. But changes in treatment should never be made except for good reasons. The physician should know what his remedies can do, and in their choice he should determine what object he desires to attain. Only with such knowledge and with such a clearly defined objective does the treatment of eczema become a rational procedure. Otherwise, it tends to become a series of blind and disastrous steps in the dark.

**Lichen simplex chronicus (Vidal); Lichen circumscriptus ;
"Nevrodermite "**

Here it is convenient to mention a condition that has wrongly been entitled a lichen, though it really presents clinical appearances which more closely resemble a patch of chronic eczema. It occurs chiefly on the neck, but may be met with elsewhere, particularly on the flexor aspect of the limbs. It consists of a slightly raised, intensely itching, slightly pigmented, usually oval or lozenge-shaped patch, divided by a series of lines into rough quadrilaterals, which, on touch, feels like shagreen-leather. It may occur as a result of chronic eczema ; more often it occurs independently. It is very rebellious to treatment, but in my hands ointments containing tar, and applications of the X-rays, have given good results.

PLATE XX



PSORIASIS affecting the face

CHAPTER XVII

ERYTHEMATO-SQUAMOUS ERUPTIONS OF UNKNOWN CAUSE

Psoriasis

PSORIASIS is one of the commonest diseases of the skin, and as a rule presents features so definite that its diagnosis is easy. It affects all classes and both sexes in almost equal proportion, and though it may be met with at all ages, it is not common in early childhood, is most frequently met with in the adolescent or young adults, and once developed may cling to an individual with intermissions of freedom for all his days. It is commonest in damp cold countries, and rarer in warm dry climates. It affects alcoholics and abstainers, meat-eaters and vegetarians impartially.

Definition.—It is a chronic inflammatory disease of the skin, manifesting itself by the appearance, usually on certain sites of election, of whitish or silvery laminated scales aggregated in greater or less profusion on top of slightly raised, well-margined, reddish patches. The lesions are dry and do not exude moisture.

Etiology.—The cause of the disease is unknown, but the tendency to it is hereditary. Griffith has suggested that in psoriasis we have an atavistic reversion to an ancestral type of (reptilian) skin, for protection in cold damp climates. Apparently some vice of the skin is transmitted which renders members of a family in whose stock there is a history of psoriasis liable to become affected (Fig. 102). Whether or not an individual with this hereditary tendency will actually develop the disease depends on factors which are not yet determined. The disease may affect several children in a family if one or other of their parents suffer; or it may skip a generation to appear among the grandchildren of a person who suffers. In most cases a close inquiry will reveal the hereditary character of the disease, but in others such evidence is lacking. Frequently psoriasis occurs among the robust and strong, and in most cases it is not incompatible with excellent general health, but it is also frequently met with in the anæmic and delicate with low reserves of nervous energy. A parasitic origin has been suggested, but no definite proof has been established, though L. Bory* states that repeated bacteriological examinations made by

* *Bull. Soc. franc. de dermat. et de syph.*, 7, 278, 1919.

himself have constantly shown small, irregular, rod-like germs resembling mycelial threads. It has been suggested that the disease is a



FIG. 101.—Psoriasis.

Note the large lesion along the line of pressure of the corsets.

general infection, but proof is lacking. It has also been suggested that it depends on a focal infection, but proof is lacking, though some cases improve if septic foci are eradicated. Further, a neuropathic

influence, acting through the vaso-motor system, has been suggested as a cause, but this too is an unproven theory. Some authorities have tried to find a connection between hereditary syphilis and psoriasis, but their conclusions have not been accepted. Others again believe that psoriasis and tuberculosis are related, but the grounds on which this opinion is based are not strong enough to carry conviction.

The truth is, we are still in the dark as to the cause. Some cases are associated with rheumatoid arthritis, and others with glycosuria, and it is possible that in these cases there is some intestinal toxæmia at work. It may be a disease of metabolism, or it may depend upon some neuropathic disturbance. Pick * found an almost constant increase in the blood-sugar content in fifteen cases he examined. This points to faulty metabolism. Whatever the underlying cause, there is no doubt that in the predisposed an outbreak may be initiated by some trivial injury to the skin. Thus I have seen it begin in a vaccination scar ; in a tattoo-mark ; after a mosquito bite, and after the bite of a horse ; while in another case I have seen it originate in a small superficial bruise—without visible solution of continuity—in the skin over the sternum. Friction from rough clothing, a pin prick or a needle scratch, and chemical or physical irritations applied externally, have all been noted as precursors of an outbreak. But it must be distinctly understood that these external lesions are not, so far as is known, the actual cause of the disease. They simply determine the point of outbreak of the eruption in those hereditarily predisposed to the disease.

Histo-pathology.—The chief pathological changes are in the epidermis. The prickle-cell layer is greatly thickened, especially between the papillæ, and thinned over the papillæ. The stratum granulosum has disappeared. The stratum corneum is greatly thickened. The horn cells are irregularly keratinised, larger than normal, often vacuolated, and frequently retain their nuclei. Sometimes leucocytes are visible among the horn cells. These leucocytes may be found in small necrotic clumps giving rise to tiny abscess-like formations, which Sabouraud regards as inseparable from and characteristic of psoriasis. The horny scales, which are practically fat-free, are heaped up in layers, and are easily separable. Their silvery appearance is said to be due to the presence of air between them.

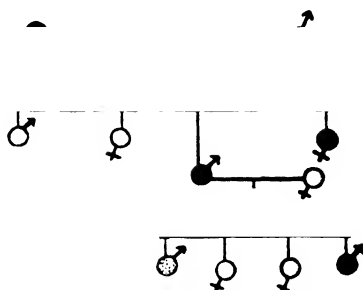


FIG. 102.—Family chart showing psoriasis in three generations. Black=severe case ; dotted =mild case.

* *Dermat. Wochenschrift*, 72, 297, April, 1921.

In addition to these changes in the epidermis there are also marked alterations in the corium. The capillary blood-vessels are dilate

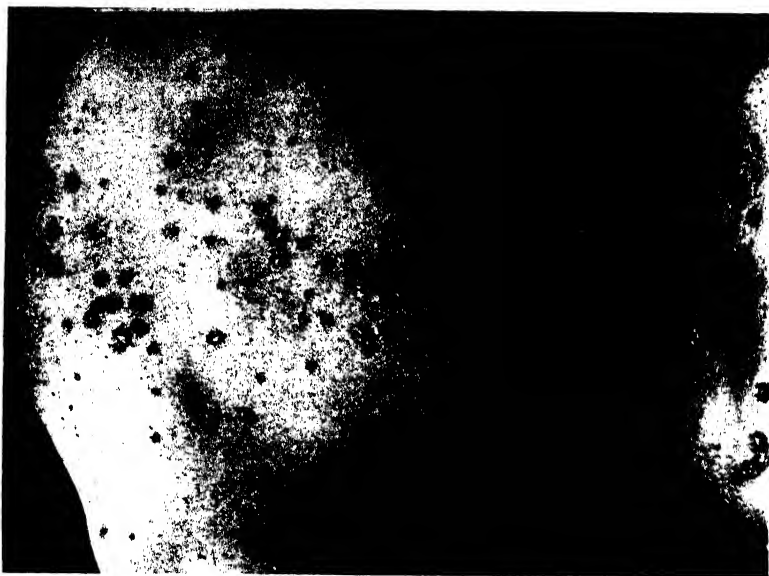


FIG. 104.—Psoriasis nummularis

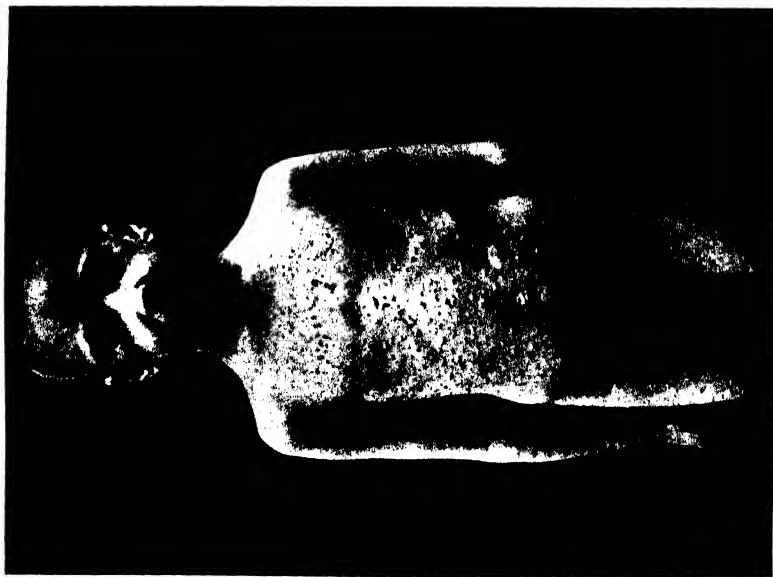
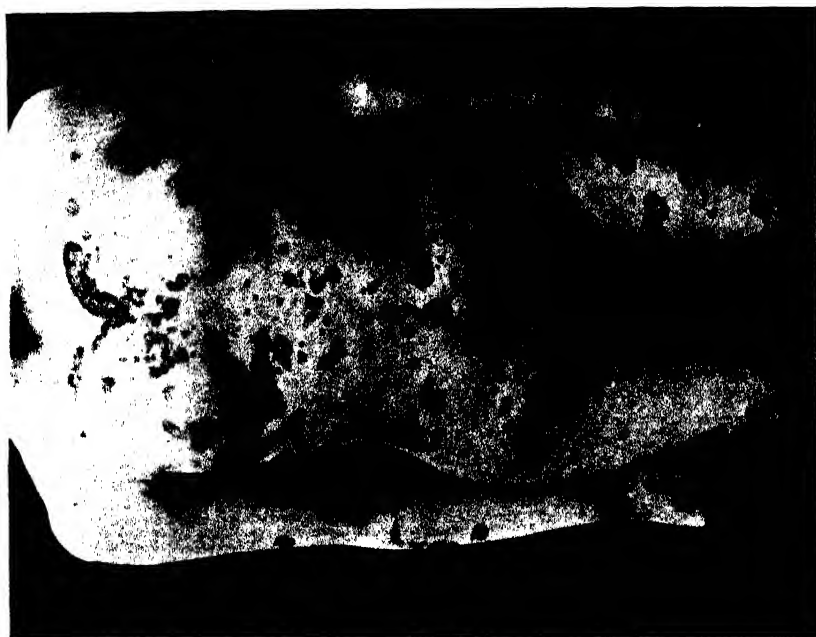


FIG. 103.—Psoriasis punctata.

the papillæ are lengthened, cylindrical, and appear swollen. There is a corresponding lengthening of the interpapillary processes with

PLATE XXI



(b)

PSORIASIS



(a)

dilatation of the inter-epithelial lymphatics. The papillæ are the seats of a small-celled perivascular infiltration.

Symptoms and Course.—The initial lesions of psoriasis are small, slightly raised, reddish punctate papules (Fig. 103) (*Psoriasis punctata*) covered with fine scales. The scales may not at first be visible to the naked eye, but they are readily recognised if the surface of the papule be gently scraped.

These papules enlarge peripherally, and as they grow their scaly



FIG. 105.—Psoriasis guttata.

Note that below the elbow the lesions are massed into a patch.

character becomes more apparent. As they grow by centrifugal extension, and not by the appearance of new nodules round their margin, the lesions preserve their round or oval contour. At this stage they resemble drops of candle-grease upon the skin (*Psoriasis guttata*) (Fig. 105). It should be noted that there is slight infiltration under each lesion, and the transition from the lesion to the normal skin is sudden and sharp. The lesions may grow in size and, retaining their circular shape, appear like coins placed on the skin (*Psoriasis nummularis*) (Fig. 104). Or adjacent lesions become confluent, and

large placards of the eruption are scattered all over the body (*Psoriasis universalis*), only small intervening areas of the skin remaining free (Plate XXI, A).

Sometimes the lesions clear in the centre, which is left pigmented a brown or fawn colour, surrounded with a raised scaly edge (*Psoriasis annularis*) (Plate XXI, B). These circular or oval lesions, spreading peripherally, may run into each other, the adjacent margins clearing up, with the result that gyrate figures are produced which may roughly resemble the outline of a map (*Psoriasis gyrata*, *Psoriasis geographica*)

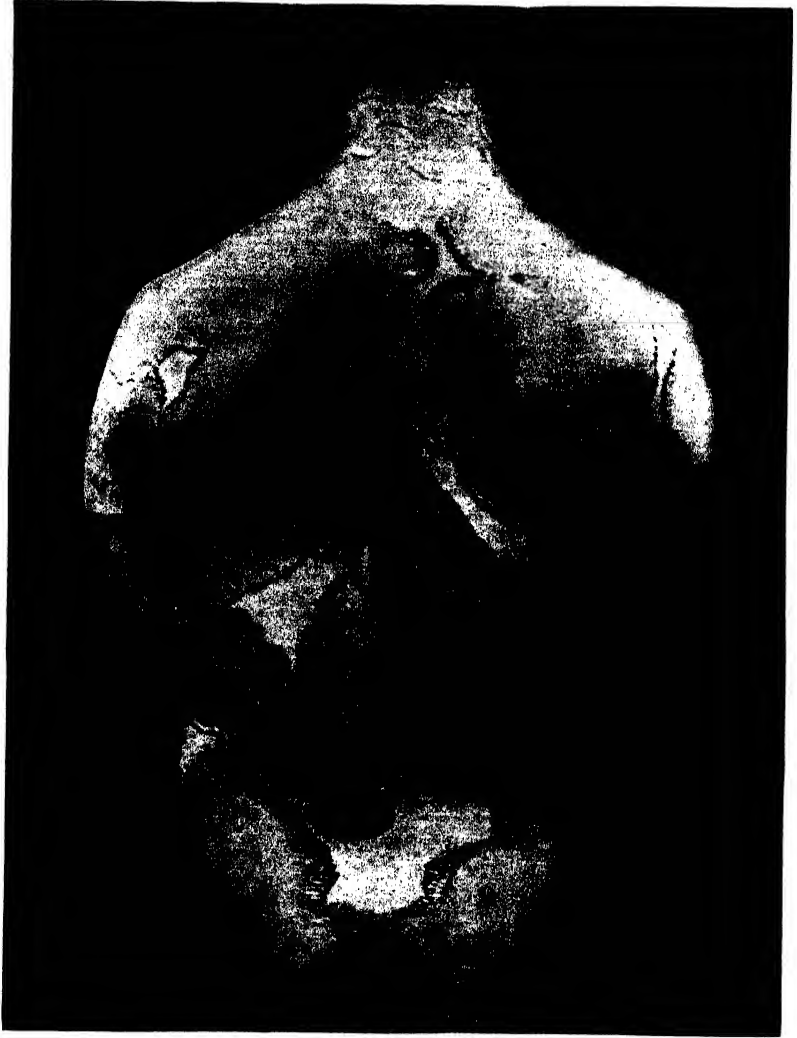


FIG. 106.—Psoriasis. Note the thick layer of silvery scales.

(Plate XXII). But it must be understood that these are simply terms descriptive of the appearance of the lesions ; the disease is one and the same.

The lesions do not all appear at the same time, but progressively, so that lesions in different stages of evolution are visible in every case. Each case passes through three stages : (1) a stage of eruptive activity, (2) a resting or quiescent stage when the character of the lesions is most typical, and (3) a period when there is a tendency to spontaneous resolution.

PLATE XXII



PSORIASIS GEOGRAPHICA

Note how the lesions have cleared in the centre

The scales of psoriasis are one of its most distinctive features (Fig. 106). They are seen on all the lesions of psoriasis which are not subject to constant washing, or to maceration by retained secretions. They are whitish or silvery, and have been compared to mother of pearl, or to fragments of mica or asbestos. They vary in thickness and size, are attached with only moderate firmness to the underlying lesion, and in some cases are so loose that when a patient undresses his clothing is studded over with them like the baulks of a herring-boat with fish-scales, and they fall in a miniature cascade about his feet. In lesions of any age the scales are easily recognisable, but in early lesions the scaly character of the disease can only be detected by scratching their surface, *e.g.* with a blunt curette.

Brocq has made systematic use of this method of *grattage* for the differential diagnosis of various skin lesions. In psoriasis "grattage" removes at first a series of agminated scales. If the grattage is continued gently and systematically one comes down at last to a fine scale, thin as tissue paper, through which the pink gleam of the corium is visible. If this last scale be removed with care one exposes a number of fine punctiform points, exuding blood or a rosy serum. This succession of phenomena on systematic *grattage* is of great help in the diagnosis of a difficult case.

Sites of Election.—

The lesions of psoriasis would seem to have a special predilection for certain regions of the body (Fig. 107). It affects particularly the skin at the back of the elbow and the front of the knee joints. Other sites of election are the scalp, the sacral region, the chest wall, and the ears. These are regions that should always be examined systematically if psoriasis is suspected. The eruption sometimes manifests a preference for parts of the integument which have been bruised or scratched, or which are subject to friction. But the lesions may be found freely on any part of the integument, and are always symmetrically distributed.

The mucous membranes are never affected; the so-called "psoriasis

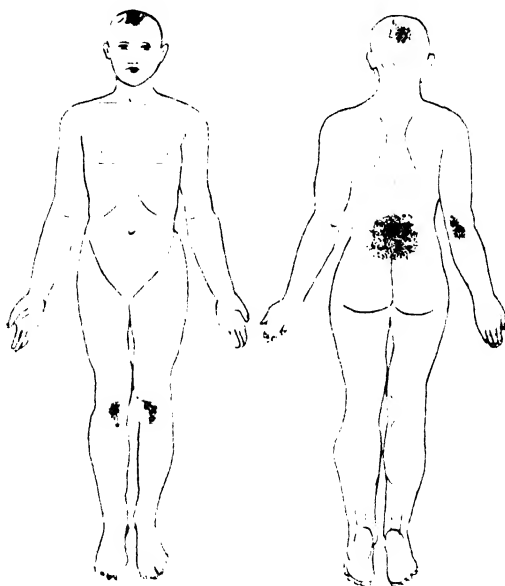


FIG. 107.—The dotted areas are the sites of election for Psoriasis.

linguæ ” and “ *psoriasis buccalis* ” are really leukoplakia. The face is occasionally, though not often, involved. (See Plate XX.)

As a rule there are no subjective symptoms associated with psoriasis, though there may be intense itching in an acute attack when the lesions are rapidly evolving. Once the lesions reach the quiescent stage, as a rule all subjective symptoms disappear.

The disease begins and runs its course without any rise of temperature, and usually without any disturbance of the general health ; but, once established, psoriasis tends to persist, with intermissions, all through life.

The effect of an intercurrent malady upon it is of interest. An attack of measles, scarlet or typhoid fever, will frequently cause the complete temporary disappearance of the eruption, and I have seen the same effect produced by pregnancy. But these conditions do not eradicate the constitutional tendency to the disease.

Something should be said of the appearance of psoriasis affecting certain structures or regions.

1. Psoriasis affecting the Nails.—In many cases of chronic psoriasis the nails become affected. The changes are best seen on the finger-nails. The early symptoms are scattered pin-point pittings. Later there may be marked thickening with discoloration of the nails, which become brittle and friable, and transversely or longitudinally furrowed.

2. Psoriasis of the Scalp.—This may take the form of small discrete patches, or the whole scalp may be covered with masses of silvery scales. The hair which forces its way through these scales is usually very dry, and occasionally there is some shedding of hair, though this is not often severe. At the hair margins all round the scalp one can invariably detect the underlying erythema, and if one employ systematic “ grattage ” for the examination of such a scalp, one meets with the same series of appearances as on the glabrous skin. The disease may be confined to the scalp alone, though this is rare.

3. The Hands.—The palms of the hands and the soles of the feet are sometimes attacked, and sometimes also the backs of the hands and fingers (Plate XXIII). On the palms and soles the lesions take the form of small symmetrically distributed dark reddish lesions, with scaling, or large fissured, reddish patches which scale freely.

4. Under the mammæ in stout women, in the genito-crural fossa, and the intergluteal furrow and the axillæ in both sexes, psoriasis may assume the appearance of *Eczema intertrigo*. The affected skin is reddened, moist, and exudes a thin discharge, and confusion of diagnosis is only avoided by the discovery of typical psoriasis lesions in other parts of the body.

Associated Conditions.—Psoriasis may be associated with other

PLATE XXIII



PSORIASIS on backs of hands

conditions. In about 50 per cent. of cases there is a history of "Rheumatism." Many cases are associated with true rheumatoid arthritis, and some are associated with glycosuria. Hebra has noted the association of neuralgia and sciatica with psoriasis.

Diagnosis.—The appearances of psoriasis are so characteristic that the ordinary case presents no difficulty in diagnosis. But if the eruption evolves quickly without the preliminary appearance of characteristic lesions at the sites of election, the rapid appearance of raised reddish squamous papules may lead to confusion with secondary *Syphilis*; while, in a chronic case, confusion may also arise with late secondary *squamous syphilides*.

1. Points of difference are that psoriasis lesions tend to affect especially the extensor aspects of the limbs, whereas the early secondary syphilitic lesions tend to prefer the flexor aspect. In psoriasis all the constituent parts of the eruption tend to be of the same type, while a syphilitic eruption is definitely polymorphic. Further, the degree of infiltration of the skin in psoriasis is very slight, in syphilis it is well marked. In secondary syphilis one expects to find, and usually does find, a typical general adenitis, with involvement of the buccal or pharyngeal mucous membranes, with possibly pains in the bones, headache, and iritis. These symptoms are absent in psoriasis. Further, the *Spironema pallidum* may be found in the lesions of syphilis, and the blood serum ought to give a positive Wassermann reaction. The late secondary syphilide is often serpiginous in outline, associated with some scarring, and is crusted rather than scaly, and it may be possible to find evidence of old syphilis in other parts of the body.

2. Psoriasis may be confused with *Seborrhæic dermatitis*, with which, according to Unna and Norman Walker, it has close kinship. But seborrhœa almost always begins on the scalp, and from thence travels downwards on to the trunk. On the scalp the lesions of psoriasis are as a rule discrete, with sharp borders and agminated dry scales; while seborrhœa is diffuse, with greasy scales. Further, in seborrhœa of the scalp the hair-loss is constant and considerable, which is not the case in psoriasis.

In *Seborrhæic dermatitis* of the trunk the lesions are less scaly than those of psoriasis, and the scales are greasy and yellowish in colour, which differentiates them from the silvery, brittle, dry squames of psoriasis.

3. *Chronic eczema* of the squamous type may be confused with psoriasis, but eczema has a distinct preference for the flexor aspect of limbs, the patches are ill defined, there is usually considerable itching, and frequently a history of "weeping."

4. *Lichen ruber planus*, if extensive, or if the lesions be large, may be confused with psoriasis. But in any case of lichen, whatever similarities it may present with psoriasis, it is always possible to discover some isolated lesions with the characteristic angular shape, the

“waxy glance,” and absence of scales. Such a lesion, if subjected to “grattage,” does not give the characteristic series of scales one finds in psoriasis. In lichen there is less infiltration of the skin than in psoriasis, and there is intense itching. Further, in most severe cases of lichen the buccal mucosa is involved.

5. *Pityriasis Rosea*.—In this the disease has a definite and characteristic evolution; it is almost always confined to the trunk and does not affect the sites of election of psoriasis; the infiltration of the skin is so slight as to be almost undetectable, and the scales are soft, fine, and on “grattage” do not give the typical psoriasis reaction.

Prognosis.—The prognosis as to life is good. The prognosis as to the immediate attack is also good, as a large proportion of attacks can be made to disappear, but only a rash physician will claim that he can cure psoriasis, for it is a disease which tends invariably to recur.

The prognosis as to a patient's usefulness in life depends on whether the hands and feet are severely affected or not. If the hands and feet are severely affected their usefulness may be seriously interfered with in certain occupations. Psoriasis would seem to be a bar to efficient military service, on account of the objection felt by other men to sleeping or feeding with a soldier suffering from a visible skin eruption. Most of the recruits suffering from psoriasis, who were raked into the army by conscription during the great war, spent the greater part of their time in hospital.

Psoriasis is no bar to marriage. This is a point on which advice is frequently sought by a sufferer. The children of a psoriasis patient may all escape, though the likelihood is that one or more may develop the disease. This fact should be made plain to both contracting parties to avoid possible recriminations later. Occasionally psoriasis may drift into an incurable and fatal form of exfoliating dermatitis, or Epithelioma may supervene upon it, especially if the patient has been treated for a prolonged period with arsenic. Of eighteen cases of skin carcinoma developing on psoriasis Alexander concluded that eleven were due to arsenic.*

Treatment.—Treatment requires to be varied slightly according as the case is an acute or a chronic one. General hygienic treatment is of value. Though there is no definite proof that focal sepsis is a cause of psoriasis, it is well to investigate the condition of the teeth, tonsils, and alimentary track, and if any possible source of septic absorption is discovered, it should be dealt with. Danysz has had good results from the use of a vaccine made from the intestinal flora. Various forms of restricted diet have been recommended, and among others, a diet consisting wholly of rice. I have been unable to satisfy myself that diet has much influence on psoriasis, but as a general

* *Arch. f. dermat. u. syph.*, 129, Pt. 1, 1921.

principle it is well to restrict patients to a plain, wholesome, nutritious and easily digested diet. Tea, coffee, and tobacco should be used sparingly, and alcohol should be forbidden absolutely.

Constipation, if present, should be corrected. Anæmia, or any other associated illness, should be treated on appropriate lines.

Apart from general hygienic measures, psoriasis should be treated by internal and external medication.

1. Treatment of the acute case, in which the lesions are erupting rapidly and sometimes itching.

The patient should be put in bed and wear cotton next the skin. Internally, antimonial wine, in 5-10 min. doses thrice daily, is often of great service. Salicin and salicylate of soda are also useful in these cases, as are also the alkalis, such as potassium acetate and potassium citrate. In an acute case my experience leads me to believe that thyroid is harmful. Great relief may be derived from a daily tepid bath containing $\bar{3}$ ss. of Liquor Carbonis Detergens in every twelve gallons. The patient may take a bath of this kind daily, and lie in it for 15-20 minutes. On coming out the skin should be dried gently, and anointed with the following oily suspension of calamine :—

R. Ichthyol, grs. iii.
Calaminæ Preparatæ, grs. xv.
Pulv. Zinci Ox., grs. xv.
Ol. Olivarum, $\bar{3}$ ss.
Aq. Calcis, ad $\bar{3}$ i.
M.

Dr. Elizabeth Hunt has made a number of interesting observations in my clinic with a view to discovering some means of arresting the period of evolution, and converting the acute into the quiescent stage. For this purpose she has tried auto-hæmotherapy, injections of intramine, vaccines from the intestinal flora made by Danysz' method, and injections of 'Terpichin, 1 c.c. The injections of 'Terpichin, repeated once weekly, have given the best results, shortening the period of evolution and, apparently, helping the efficacy of the remedies that are applied when the disease has passed into the quiescent stage.

The case which evolves acutely sometimes resolves with almost equal rapidity, but most cases settle down into a quiescent semi-chronic condition, and the treatment must be modified accordingly. There is then no longer need to keep the patient in bed.

2. Treatment of the Chronic Case.—Internal treatment. Here arsenic holds pride of place. To get its full value it must be pushed to the limits of toleration. Donovan's solution or Fowler's solution are probably the best preparations. The administration should begin with small doses, *e.g.* 1 min. thrice daily after food, increasing rapidly

by an extra minium per day until signs of intolerance, such as slight injection of the conjunctivæ, or puffiness under the eyelids, or gastrointestinal discomfort supervenes. Then diminish the dose gradually until the minimum dose is reached ; allow a rest of a week, and then proceed as before. While a patient is undergoing this intensive arsenical treatment, it is important to watch the urine for albumen. The treatment should not be continued for more than two months, unless very marked signs of improvement are manifest. I have known the administration of arsenic to be followed by the complete disappearance of extensive lesions without any local applications at all.

The arseno-benzol derivatives given intramuscularly or intravenously have not, in my experience, been of much benefit. Thyroid substance sometimes gives good results in chronic psoriasis, but it should be administered with caution to ambulatory patients. In the absence of definite signs of hypothyroidism which would indicate massive dosage, a five-grain tabloid an hour before bedtime every night is sufficient to give an indication as to whether the case is likely to be influenced for the better, and one can then decide as to whether to push the drug or not. Sometimes thyroid substance would appear to make the case worse. Thymus and testicular extracts have been tried with advantage. Potassium iodide may do good, but occasionally it may do harm.

Of recent years I have found sulphur colloid, in 1-2 dram doses thrice daily after food, give excellent results both in acute and chronic cases.

Ferguson Smith reports good results from the intravenous injection twice or thrice a week of salicylate of soda. He used a solution of 20 per cent. strength. The maximum dose of this solution recommended is 12 c.c.

The intravenous injection of autogenous serum, horse-serum, and typhoid vaccine has been tried in America with indifferent success. Kingbery and Bechet have tried venipuncture with benefit,* and Moore † recommends injections of collosol manganese.

Local Treatment of Chronic Case.—If the scales are very thick, it is of advantage to remove as many of them as possible by means of baths. To facilitate their removal one may anoint the affected parts thoroughly at night with an ointment as follows :—

R. Acid Salicylici, grs. xx.

Paraffin. Mollis, ʒi.

M.

The following morning the whole of the affected parts should be well rubbed with soft soap, and the patient should lie in a warm bath for

* *Jnl. Am. Med. Assoc.*, **75**, 937, October, 1920.

† *Brit. Med. Jnl.*, **2**, 41, July, 1922.

half an hour. This combined treatment may be repeated several times if necessary.

Once the scales have been well cleared away by this procedure, one should proceed to apply active local treatment. For this purpose many remedies have been recommended, but the best of all is some combination of tar. For routine practice I am well pleased with the following ointment, whose strength may be modified in different directions according to the needs of the individual case :—

R. Ung. Picis Liquidi.
 Ung. Hydrarg. Nit. Dil.
 Ung. Acidi Salicylici.
 Ung. Glycerini Plumbi Subacet., āā. ʒi.
 M.

Sig. To be rubbed into the lesions thoroughly night and morning.

Pyrogallic acid in a 2-4 per cent. admixture with Lassar's paste may also be used, but its use is not advisable in extensive cases or in cases showing a lively inflammation or exfoliation which would favour absorption because of its toxic properties.

Oleum Rusci, Oleum Cadini, and Liquor Carbonis Detergens in 2-5 per cent. combination with a paste or thick ointment base are often of use. Liquor Carbonis Detergens applied as a paint to small chronic discrete lesions is often of use.

Chrysarobin, as a paint suspended in guttapercha, or better as a 5-20 per cent. ointment, is very useful ; but it has serious disadvantages. (1) It may set up a lively inflammation of the skin, sometimes an exfoliating dermatitis. (2) If it gets into the eyes, a painful conjunctivitis supervenes. (3) Its use may be followed by toxic absorption. (4) It stains under-garments and bed linen indelibly. (5) It should not be used on the scalp, as it dyes the hair and may get into the eyes. (6) Although it is more rapid in causing the disappearance of psoriasis lesions than any other local remedy, it is doubtful if a patient treated with chrysarobin remains free from a recurrence of the disease as long as a patient treated by other local means.

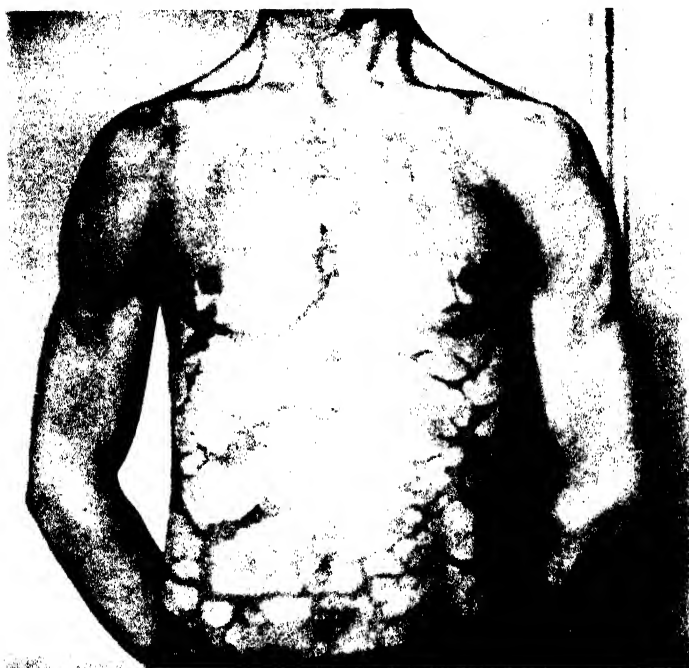
The ointment is much more efficacious than any suspension of chrysarobin in gutta-percha, collodion, or solution in chloroform. If used, it should be rubbed in night and morning, preferably with a rubber glove, until the sites of the lesions become a dead white surrounded by a vivid erythema (Fig. 108). Thereafter the patient may be given a soothing cream as follows :—

R. Acid. Salicyl., grs. xx.
 Ung. Zinci Ox.
 Ung. Aq. Rosæ, āā. ʒi.
 M.

or an oily calamine liniment with ichthyol. β -naphthol 10 per cent. in an ointment base has been recommended, but it is not very efficacious.

A word may be said as to the treatment of psoriasis in special regions. On the scalp, the indications are for frequent washing with a spirit soap lotion, and the daily use of such an ointment as—

R. Liquor Carbonis Detergens, min. xv.
Hyd. Ammon., grs. xv.
Lanolini, \bar{z} i.
Paraffin. Mollis, ad \bar{z} i
M.



[Photo by Dr. Oram.]

FIG. 108.—Patient treated with chrysarobin ointment. The sites of the lesions are dead white ; the normal skin is a vivid red.

The following ointment is also of use in that region :—

R. Sapon. Mollis Virid., \bar{z} ss.
Acidi Salicylici, grs. xx.
Ichthyol, grs. v.
Paraffin. Mollis, \bar{z} ss.
M.

Sig. To be well rubbed into the scalp every night, and followed by a shampoo with spirit soap lotion in the morning.

Under the breasts, in the groins, and between the buttocks, when psoriasis assumes an eczematous form one may soothe the parts with calamine lotion, and afterwards apply this paste—

R. Acidi Pyrogallici, grs. v.
 Ichthyol, grs. v.
 Acidi Salicylici, grs. x.
 Pulv. Amyli, ʒii.
 Pulv. Zinci Ox., ʒii.
 Adipis Benzoati, ad ʒi.
 M.

Sig. Apply night and morning, cleansing the parts between each dressing with—

R. Ol. Rusci, min. x.
 Ol. Olivarium, ʒi.
 M.

Psoriasis of the palms, backs of hands, and soles of the feet may be treated with the compound ointment of Tar, Hyd. Nit. Dil., etc. (formula, p. 324), but most cases yield very speedily to $\frac{1}{2}$ -pastille dose of X-rays repeated thrice, at weekly intervals.

Here a word of caution is necessary. Never apply X-rays to a rapidly evolving psoriasis anywhere on the body. The psoriatic skin seems hypersensitive to the X-rays, and even small doses may be followed by a lively reaction, and sometimes by telangiectases.

In some cases ultra-violet light treatment gives excellent results. Psoriasis of the nails is, as a rule, very difficult to influence. Oleate of tin ointment (20 grs. to the ounce) may help, as may also an ointment of Hydrarg. Ammoniatum. X-rays are of use here too.

The secret of success in the treatment of psoriasis is the thorough application of the remedies. Mere smearing on of ointments is worse than useless; they must be massaged in. Further, patience is necessary, and one should not desist from treatment so long as a single lesion of psoriasis is left on the body. A case in which, after a course of treatment, a few lesions still remain speedily relapses.

In very obstinate cases a change of residence for a time to a warm dry climate may be followed by immediate improvement.

PARAPSORIASIS

Under this title have been grouped a number of eruptions chronic in character, the appearance of which suggests a combination of psoriasis, lichen planus, and seborrhæic dermatitis.

Various names have been suggested for the differing types of lesions thus classed together: *e.g.* *Pityriasis chronica lichenoides* (Juliusberg); *Dermatitis psoriasiformis nodularis* (Neisser and Jadassohn); *Parakeratosis*

variegata (Unna); *Lichen variegatus* (Radcliffe Crocker); *Pityriasis maculosa chronica* (Rasch); *Xanthoerythrodermia perstans* (Radcliffe Crocker).

Into this apparent confusion the genius of Brocq has brought some order. All these varied conditions have some points of similarity with Psoriasis, and Brocq has suggested that they be classified as types of Parapsoriasis, of which he distinguishes three varieties: (1) *Parapsoriasis guttata*; (2) *Parapsoriasis lichenoides*; (3) *Erythrodermie pityriasique en plaques disséminées*.

Briefly, the characteristic lesions consist of numerous, or scanty, circumscribed, yellowish-brown or reddish lesions, covered with fine thin scales. The lesions are round, oval, or irregular in shape, non-infiltrated and usually unattended by any itching. Their sites of election are the extremities and the skin over the buttocks, but they may be met with all over the body, though the face is usually spared.

The etiology is unknown; the histo-pathology has not been satisfactorily worked out.

All these lesions have this in common—they are extremely rebellious to treatment.

Internally arsenic, thyroid substance, mercury, salicin, and salicylate of soda may be tried; and as local applications, ointments or pastes containing sulphur, resorcin, pyrogallic acid, and chrysarobin.

Löwenstein* claims good results in one case from the intramuscular injection of pilocarpin.

Its rebelliousness to treatment is a characteristic feature which aids in the diagnosis of the condition.

Pityriasis rosea

Until recently this disease was known by the Germans as *Herpes tonsurans disseminatus*, the confusion arising from a mistaken belief that it was due to the ringworm fungus. But the bacteriologist has now compelled the clinician to abandon this belief, for no ringworm fungus has ever been discovered in the lesions.

Etiology.—Its clinical appearances, and the manner in which the lesions spread, have led many to believe that the disease must be parasitic in origin. But if this be the case the parasite is yet to discover. There is no definite proof of contagion, yet one's hospital experience would lead one to believe that the disease occurs in little epidemics. It may be that, as in the case of the exanthemata, the skin lesions are simply the outward manifestations of some systemic infection; but if this be so the infection is of a mild character, for the attacks are afebrile.

The precise cause is unknown, but the disease has a seasonal periodicity, being most common in late spring or early summer, and it affects young adults chiefly—girls more often than boys.

Symptoms and Course.—The disease begins with what is known as "the herald patch," a lesion of some size situated usually over the

* *Dermat. Wochenschrift*, 70, 4, 1920.

lower ribs in front or laterally, or the upper part of the anterior abdominal wall (Fig. 109). This herald patch may not be noticed by the patient till the full efflorescence of the eruption has occurred, when it can usually be picked out from among the other lesions by its much larger size. After a week or a fortnight the general eruption begins to appear, the earliest lesions being situated near the "herald patch." The lesions consist of small rose-coloured macules, with no underlying



FIG. 109.—Pityriasis rosea.

infiltration. They appear on the trunk in crops, their outbreak spreading over two or three weeks, and spread to the upper part of the limbs, but the face and the hands are usually unaffected.

The rose-coloured lesions increase rapidly in number and in size, assuming a rounded or more often oval contour, spreading at the periphery, clearing up in the centre. A fully developed lesion consists of a slightly raised peripheral zone, somewhat rose-coloured, the colour fading towards the outward edge of the periphery where it merges into the normal skin. The peripheral zone is very finely scaly on its inner

edge. The central area of a completely developed lesion appears somewhat depressed, but this is more apparent than real. It is of a delicate fawn-colour, with a smooth satin-like surface, and is soft to the touch. When pressed on from side to side it crinkles in fine lines like a piece of cigarette paper. For its full evolution from a rosy macule to the complete lesion a period of ten days to a fortnight is required. Sometimes adjacent lesions run into each other, and gyrate forms are produced. If untreated the eruption tends to disappear spontaneously in 4-8 weeks.

As a rule the subjective symptoms are slight, amounting to no more than a trifling pruritus. There is no systemic disturbance.

Histo-pathology.—Examination of the edges of a lesion will show that it is studded over by a series of very fine vesicles on an erythematous base. According to Sabouraud these vesicles are filled by migrated mono-nuclear leucocytes. The scaliness is due to rupture or drying up of these tiny vesicles. In the true skin, as one would expect from the erythematous element in the disease, there is some capillary congestion.

Differential Diagnosis.—Confusion may arise with *Tinea circinata*, for the two diseases have somewhat similar clinical appearances, but a microscopical examination will rapidly dispel doubt.

Confusion may also arise with *Seborrhæic dermatitis*. For differential diagnosis, see p. 378.

The macular roseola of *secondary syphilis* may also give rise to confusion. For differential diagnosis, see p. 97.

In *Psoriasis* the scales are much coarser, and the disease has a predilection for the extensor aspect of the limbs.

Treatment.—Spontaneous recovery occurs in the untreated case, but it may be hastened by the use of the following paste : —

R. Liq. Carbonis Detergens, min. x.
 Sulph. Precip., grs. x.
 Acidi Salicylici, grs. x.
 Pulveris Amyli, ℥ii.
 Pulveris Zinci Oxidi, ℥ii.
 Paraffini Mollis, ℥ss.

Sig. To be rubbed in night and morning.

If the patient objects to a greasy application, the skin may be washed daily with an antiseptic soap, *e.g.* collosol argentum soap, coal-tar soap, or bichloride of mercury, or sulphur, camphor and balsam of Peru soap, and dusted afterwards with a talc powder.

PLATE XXIV



LICHEN RUBER PLANUS

CHAPTER XVIII

ERYTHEMATO-PAPULAR ERUPTIONS OF UNKNOWN CAUSE

Lichen ruber planus. Lichen of Wilson

Definition.—A disease of the skin characterised by an eruption of multiple small flat-topped papules, with an angular contour, and a characteristic “ waxy glance ” when looked at obliquely. The disease is usually accompanied by severe itching.

Etiology. The precise cause of Lichen planus is unknown, but many cases supervene on severe nervous shock ; others are preceded by a period of nervous exhaustion. Many believe that the cause is a micro-organism. Thibierge holds that lichen is auto-inoculable because papules will develop along a scratch mark and as arsenic will cause many cases to improve he concludes that it may be due to a specific micro-organism. None has yet been discovered. There is, however, a growing body of evidence that it may depend on focal sepsis. Chipman traced eight cases to focal dental sepsis, all of which recovered on the removal of the affected teeth ; and Leslie Roberts reports the case of a woman who made a rapid recovery after a focal infection in the tonsils had been removed, and a vaccine made from the streptococcus found there had been administered. Possibly the factor of nervous shock, which has so long been regarded as an important element in the production of the disease may act by reducing the resistance of the patient so that focal sepsis may the more readily produce its remoter effects. That nervous shock alone is hardly likely to be the cause is proved by one's war experience. I saw many thousand soldiers at home and abroad suffering from diseases of the skin, but lichen planus was no more common among them than it is among civilians in times of peace. Rost affirms that in Germany during and immediately after the war he saw comparatively few cases of lichen ; but there has been an increase with the return to more normal conditions and better food. A scratch or other injury may determine the site of an outbreak of papules, but injury is not the cause of the disease ; it is simply the determining factor, in a person already suffering from or predisposed to lichen, for the eruption of lesions in a special situation.

Histology.—A lichen papule begins in the true skin as a circumscribed area of round-celled infiltration round the dilated capillaries. The epidermis over these areas of infiltration is thickened in all its

layers, the stratum granulosum being specially hypertrophied, and the eleidin irregularly deposited. It is this thickening which produces



FIG. 110.—Lichen ruber planus.

Note the isolated papules, and the thick plaques produced by their confluence.

the visible lesion, and the irregular deposition of the eleidin is said to produce the striæ on the surface of the papules. The papules are arranged round sweat pores or sebaceous follicles.

Symptoms and Course.—The disease affects both sexes, but is commoner among women than men. Graham Little, analysing 270 cases of his own, found 171 were in females and 99 in males. In his experience the highest incidence of the disease was between the ages of 35 and 55. It occurs but rarely in childhood or adolescence, or in old age.

The individual lesions consist of flat-topped papules, 1–5 mm. in diameter. Angular or polygonal in contour, the papules are situated between the natural lines of the skin, and when examined in oblique light present a characteristic “waxy glance.” Many of the papules show a characteristic whitish striation (Wickham's *striae*).

Their colour varies with their age. The earliest lichen papules are often hardly distinguishable in colour from the surrounding skin. At first pale pink or lilac-coloured, they tend to become brownish in the period of retrogression. Adjacent papules may become confluent, so that areas of greater or less size, lilac-coloured or reddish, are formed (Plate XXIV). The surface of these plaques is sometimes slightly scaly; and on examination one sees the plaque to be broken up into small quadrilateral

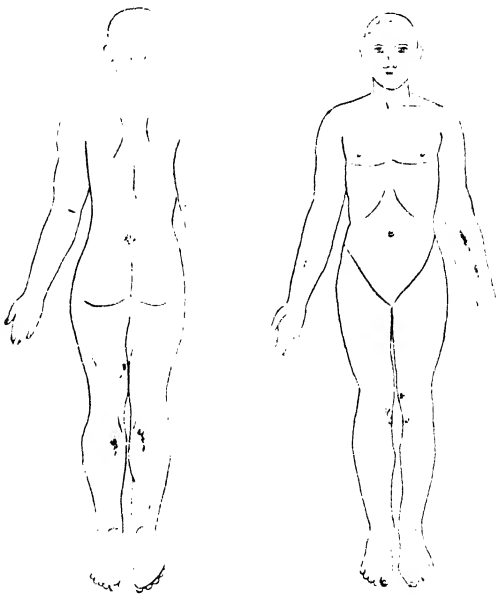


FIG. 111.—The dotted areas mark the commoner situations for lichen.

areas by the exaggeration of the normal folds of the skin. These areas may be difficult to recognise as lichen unless one examines the periphery carefully, when one will find almost invariably outlying characteristic papules (Fig. 110).

The sites of election for the appearance of lichen papules (Fig. 111) are particularly the front of the wrists, the skin below and in front of the elbow joints, the skin above and to the inner side of the knees, the nape of the neck, the sacral region, the mucous membrane of the mouth, the glans penis, the prepuce, and the vulva. The face, scalp, hands, and feet usually escape. The disease is attended by a lively sensation of itching, whose intensity varies, not with the severity of the eruption, but with the nervous habit of the patient. The eruption is subacute

or chronic in evolution. The papules persist for some weeks, and then tend to recede. Plaques of confluent papules may persist for months or years. As one crop of papules disappears another frequently comes out, and this process may be repeated several times. A brownish stain marks for a time the site where a papule has been, but it is gradually lost. No scarring follows a lichen eruption. On the mucous membrane of the mouth, where it may be present without the patient's knowledge, or where it may set up a distressing pruritus, the eruption takes the form of rounded papules, hard to the touch, rising from apparently normal mucosa. The papules are about the size of a pin's head, and are of a dull whitish colour, and are usually found in the buccal pouches, or more rarely on the tongue or lips.

On the glans penis the lesions occur frequently in annular form, as reddish or white papules.

Certain special forms of lichen eruption may be mentioned.

1. **Lichen planus verrucosus vel hypertrophicus.** found usually below the knee, or on the front or inner side of the shin bone, is usually unilateral (Fig. 112). It appears as a thickened, warty patch of dark red or violaceous hue. It is hard to the touch, usually itches considerably, and round its periphery one can almost always discern outlying large papules springing from normal skin. Frequently the surface of such a patch is covered by numerous poral apertures, so that it resembles a sieve. The condition tends to persist for years, and is probably due to the aggravation of an ordinary confluent patch of Lichen planus by prolonged scratching. The condition should be diagnosed from *Lupus verrucosus*, which it resembles in appearance. Points of difference are : (1) Lichen verrucosus itches ; (2) the lesions round the periphery of the verrucose patch are characteristic lichen papules if the disease is lichen, and "apple jelly" nodules if the patch is lupus.

2. **Lichen Planus Annularis.**—Most common on the penis and forehead, though this arrangement may occur anywhere. I have seen it well marked on the fronts of the wrists and inner sides of the thighs. The annular configuration arises either from the development of a series of close-set papules in a circle or from the peripheral spread of a large papule, which extends excentrically, while it clears up and becomes depressed in the centre (Plate XXV, A).

3. **Lichen Planus Linearis.**—In this form the eruption occurs in a long line, often on the back of the thighs, though also met with on the arm. The line, which consists of a more or less unbroken arrangement of papules, may reach from buttock to heel, and often develops very rapidly. Graham Little emphasises the fact that a large proportion of patients who present this curious formation are children. The linear lesion may be the only evidence of lichen planus, or it may be associated with typical plane papules elsewhere.

PLATE XXV



(a) LICHEN PLANUS ANNULARIS



(b) LICHEN PLANUS OBTUSUS

4. **Lichen planus moniliformis** is a rare condition. In this form of eruption, which is usually met with on the limbs or the neck, the lesions are large and somewhat verrucose, and are arranged in a long line resembling a string of beads or of coral. The condition



FIG. 112.—Lichen planus verrucosus.

sometimes suggests a long hypertrophied scar, but the uneven cornification of its surface, the colour (brown on lilac or purple), and the presence of adjacent isolated lesions of characteristic appearance, give a clue to the correct diagnosis.

5. **Lichen planus bullosus** or **Lichen ruber pemphigoides**.—Very rarely, in acute cases, one sees the formation of large vesicles or

bullæ on the top of rapidly evolving papules. The condition may be confusing, but the presence of characteristic lichen papules on other parts of the body, the distribution, and the intense itching, should give a clue to the real condition.

6. Lichen planus obtusus—a rare form—consists of giant lichen papules, spherical or hemispherical in shape, and sometimes as large as a sixpenny piece (Plate XXV, B).

Prognosis.—Sooner or later every case of ordinary lichen planus recovers. But every patient should be warned that the disease tends to come out in successive crops, and that as one outbreak of lesions subsides another may take its place. A case of average severity lasts about three months, but the progress of the disease varies very considerably. A slowly appearing outbreak, which takes some months to evolve, may persist for months or even years.

But as a rule the evolution of the eruption is fairly rapid, occurring within a few weeks. This rapidly evolving form may be very extensive, and the greater part of the integument may be studded over with typical papules of varying size. In this form the confluence of papules into large plaques is not common. These cases usually recover under treatment in the course of a few weeks or months.

Lichen planus affecting the mucous membrane is very obstinate and may last for years.

Differential Diagnosis.—The intense pruritus may lead to confusion with *Scabies* ; but there should be no real doubt, for in lichen the itching is diurnal as well as nocturnal, there are no characteristic furrows between the fingers or elsewhere on the body, and the character of the lesions is wholly distinct.

Lichen planus affecting the buccal mucosa may be confused with *secondary syphilitic lesions* in the same region. But in lichen the lesions are hard, small, and pin-point, and are situated under the mucous membrane, and show no tendency to produce erosions or ulcerations. In syphilis they are large, soft, and on the surface of the mucosa, and if one examines the lesions for a few days in succession one will be struck by the fixity of the lichen lesions, and the changeability of the lesions if they are specific. Where, owing to the confluence of lichen papules on the mucosa, there is considerable infiltration, the massed lesion is distinguishable from a syphilitic infiltration by its irregular and angular contour. A similar lesion, if syphilitic, would be round in outline. Further, the presence of lesions on other parts of the body, and the results of a Wassermann test, should enable one to distinguish the two conditions. A *small papular secondary syphilitic eruption* may also be confused with lichen ruber planus. But as a rule there is more brownish hue about the syphilitic lesions, they do not itch, and the characteristic “waxy glance” is absent. An isolated lichen papule on the glans penis may lead to serious confusion with an *incipient chancre*.

But a chancre ulcerates, a lichen papule does not ; a chancre is attended by enlarged lymphatic glands in both groins, a lichen papule is not ; and the *spirochæta pallidum* is present and discoverable in the chancre.

Lichen simplex of Vidal has many points of resemblance with a patch of lichen planus, but it forms a plaque, usually oval in contour, pigmented at the edges, and without any tendency to clear up in the centre. The mischief affects chiefly the neck.

Treatment.—General : If the case is acute it is always well to begin treatment by putting the patient in bed, in light garments of cotton or silk, between sheets. Diet should be light and non-irritating, and for the first few days all red meat should be forbidden. Alcohol and coffee, and in a less degree tea and tobacco, are harmful. Warm baths containing tar in weak dilution (5i. of Liquor Carbonis Detergens in 30 gallons), taken daily, often add greatly to the patient's comfort. The patient may lie in such a bath for an hour at a time.

While the patient is in bed a careful examination should be made for any focal sepsis, and if found it should be dealt with. For internal administration three remedies are recommended. Chief of these is arsenic, which may be administered in increasing doses in the form of Liquor Arsenicalis, or Donovan's solution, or in the form of pills. When the pruritus is intense great amelioration may be secured by administering Liquor Arsenicalis and bromide of potash simultaneously.

Mercury internally is also useful. I prefer large doses, $\frac{1}{2}$ –1 dr. of Liquor Hydrarg. Perchlor., thrice daily after food. Quinine is also of use. In obstinate cases an injection of Terpichin (1 c.c.) may be given once a week.

For local application in the acute stage calamine lotion, with 5–10 min. of Acid. Carbol. Liq. in each ounce, is excellent and soothing. As the acute stage subsides Lassar's paste containing 2 grains of ichthyol and 10 min. of Liq. Carbonis Detergens in the ounce may be applied.

In the chronic stage a paste containing $\frac{1}{2}$ –1 gr. of Hydrarg. Perchlor. to the ounce may be used ; and for the very chronic patches, painting with 5 per cent. spirituous solution of silver nitrate or the application of a strong tar ointment as follows will often do much good :—

R. Ung. Picis liq., ʒii.

Ung. Acid. Salicyl., ʒii.

Ung. Glycerini Plumbi Subacet., ʒss.

M.

Applications of X-rays have been recommended, and they may be of service in lessening the pruritus.

The hypertrophic form of lichen—*Lichen planus verrucosus*—is extremely rebellious to treatment. It is best dealt with by administering a general anæsthetic, curetting the patch thoroughly, and applying

CO₂ snow. The X-rays may also be used on the verrucose patch, but the results are often disappointing.*

Lichen Nitidus

This variety of lichen, first described by Pinkus, was, until recently, believed to be rare. But the researches of H. W. Barber and others have shown that it is commoner than is supposed, many cases being overlooked, and others confused with lichen planus, in association with which it may occur. The disease is characterised by the development on the skin of the penis, the glans penis, on the skin in the flexures of the joints, in the groins, or on the abdominal wall of a number of tiny rounded or angular papules. These papules are sometimes of the same colour as the surrounding skin, sometimes they are of a faint, reddish-yellow hue, and sometimes they are tinged with a violet or lilac colour. They have a "waxy glance," and sometimes exhibit a central depression; but they do not itch. As a rule, they are discrete; but they may be grouped into plaques, suggesting a patch of mild psoriasis or "lichenification." These plaques are met with most often in the antecubital and popliteal spaces. The mucous membranes may be affected, the lesions appearing as well-defined, greyish-white nodules. The eruption runs a chronic course. The cause is unknown. A relationship with tuberculosis has been suggested, but has not been proved.

Treatment with fractional doses of X-rays: or the use of resorcin and salicylic acid ointments has sometimes given good results. In other cases all treatment has failed.

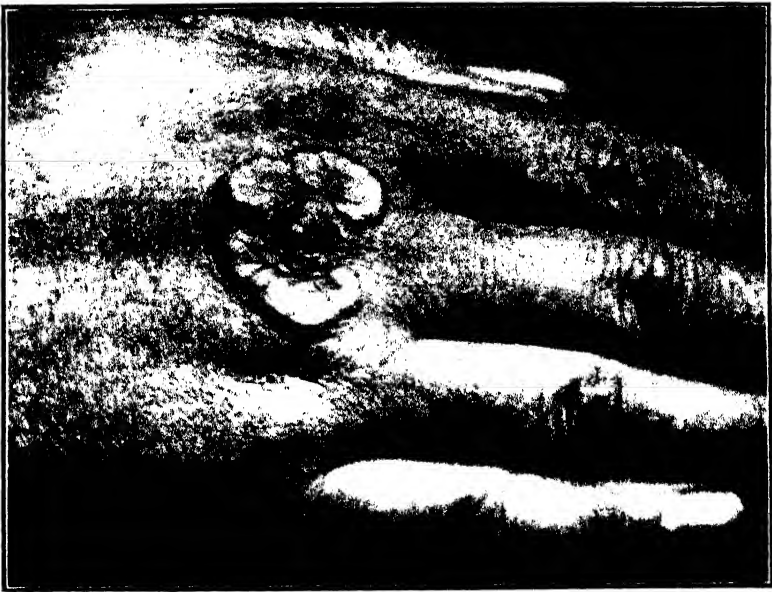
GRANULOMA ANNULARE

There is a growing body of opinion that this disease belongs to the lichen group. The lesion, which is usually situated on the back of the hand or fingers, though it may occur in many other situations, begins as a small papule, pale rose in colour, or almost indistinguishable from the normal skin tint. The papule grows fairly rapidly, and sinks in the middle, so that there is ultimately produced an annular lesion of varying size, raised slightly above the skin. Sometimes more than one papule goes to the making of the complete lesion, which extends slowly, and may persist for years (Fig. 113). It produces no subjective symptoms, and when fully developed its colour is somewhat pearly, or it may approximate very closely to the colour of the surrounding normal skin. Histologically, the lesion is seen to consist of epithelioid cells pressed close together, or held in a fine reticulum. Graham Little and Gougerot regard it as tuberculoid. Treatment by excision if that is feasible has been recommended. Ultra-violet rays have been tried with advantage, and treatment with salicylic acid ointment has helped. Sometimes the lesion disappears spontaneously.

* In the preparation of this section I have been greatly indebted to the admirable monograph on Lichen Planus by E. Graham Little, *Brit. Journ. of Dermat. and Syph.*, March and April, 1920.

LICHEN AXILLARIS : FOX-FORDYCE DISEASE

This is a comparatively rare condition, but deserves mention. Once seen, it is not likely to be forgotten, as the lesions are very characteristic. They consist of closely grouped, small papules, usually of the same hue as the normal skin, though sometimes slightly darker or redder. They appear symmetrically in the hairy regions of both axillæ, and sometimes also among the hair on the pubic region, and on the areolæ in women or round the



(Lent by Dr. Savatard.)

FIG. 113.—Granuloma Annulare.

umbilicus. The papules itch, and as the sufferers are usually neurotic women, this symptom may be intense.

Microscopically, Fox found Hyperkeratosis round the orifices of the sweat glands. Whittfield has suggested that the condition may be related to Acanthosis Nigricans (*q.v.*). A case has been reported by Netherton (*Arch. of Dermatology and Syphilis*, 1926, p. 794) associated with Hyperthyroidism.

Treatment is unsatisfactory. The following lotion may be tried. It will help in allaying the pruritus: Hydrarg. Perchlor., gr. 1; Glycerini Acidi Carbolici, $\frac{1}{2}$ oz.; Glycerini, $\frac{1}{2}$ drm. Water to 8 ozs. This should be applied night and morning.

Pityriasis rubra pilaris

This rare disease has been the subject of much controversy. It was first described by Devergie, and a few years later Hebra described a similar affection, under another name, with a high percentage of mortality (12 out of 14 cases). Later, he claimed that the disease he

had reported upon was identical with *Pityriasis rubra pilaris* (Devergie). As known in France, England, and America, *Pityriasis rubra pilaris* is not usually attended by danger to life, and it is now believed that the *Pityriasis rubra of Hebra* (*Lichen ruber acuminatus*—Kaposi) is a form of *primary exfoliative dermatitis*.

Definition.—It is a chronic disease of the skin characterised by the appearance of diffused, red, scaly patches and horny acuminate

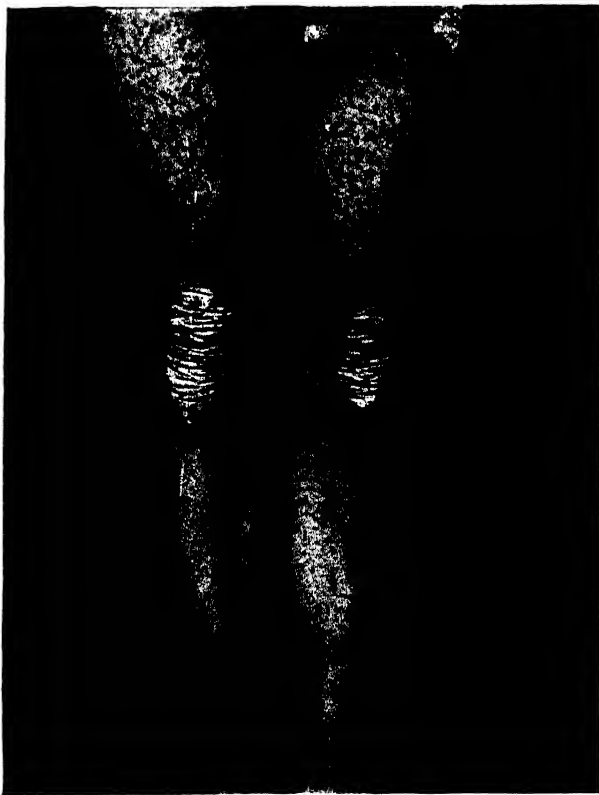


FIG. 114.—*Pityriasis rubra pilaris*.

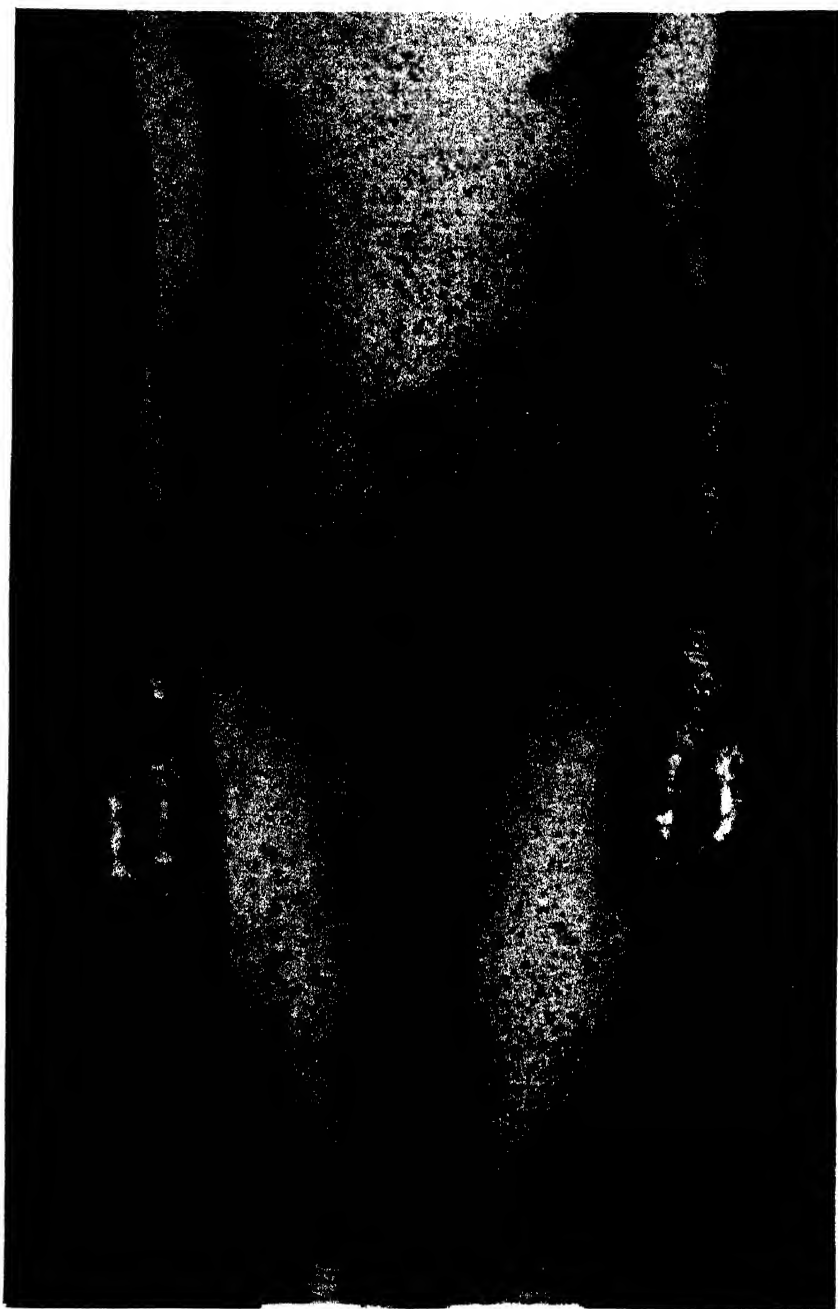
Note the papules on thighs and the psoriasiform patches over knees.

papules springing from the hair follicles or mouths of the sweat ducts. It may involve the whole integument.

Etiology.—The cause is unknown, but as the disease affects young adults chiefly—though it may occur at any age and in either sex—it may depend upon some disturbance of balance between the endocrinous glands.

It has been suggested that it is of tubercular origin, but this is unlikely.

PLATE XXVI



PITYRIASIS RUBRA PILARIS

Note the scattered papules, the scaly hands, and psoriasisiform patches over knee

Symptoms and Course.—When fully developed, Pityriasis rubra pilaris presents a remarkable clinical resemblance to a mixture of lichen planus (with acuminate papules) and psoriasis (Fig. 115). The lesions that constitute the clinical picture are : (1) reddish or reddish-brown conical papules, which, on a close examination, are seen to consist of a perifollicular elevation in the centre of which is a small spine through which a lanugo hair projects ; and (2) psoriasiform patches on the extensor aspects of the limbs, usually at the sites of election of psoriasis. Together with these typical lesions there is a general reddening and coarsening of the skin, with considerable desquamation.

The disease usually begins on the scalp, as a condition of dry scaliness. This spreads to the face, and soon afterwards the palms and soles become reddened, and about the same time the papular lesions begin to crop out on the limbs and trunk. The papules increase in number, and, at first discrete, rapidly, as more evolve, become aggregated into plaques, covered with fine scales, which ultimately may present the appearance of a patch of psoriasis. In these plaques the individual papules are often difficult to make out, but as a rule they can be discerned at the periphery, or found scattered on other parts of the body.

An area of skin affected by discrete papules, feels to the touch like a nutmeg-grater. The whole integument becomes thickened and loses its normal elasticity, and may crack in painful fissures over the flexor aspect of the joints.

There are no subjective symptoms except, occasionally, some degree of itching.

In an advanced case, the skin, considered regionally, presents the following features :—

The scalp is covered by a layer of dry scales. The hair is dry and lack-lustre, and may fall, though this is not usual. The face is red and covered by fine scales (Fig. 115). Owing to its infiltration it loses some of its mobility. The mouth may be difficult to open, and there may be some ectropion.

On the arms and legs we have patches suggesting psoriasis and colonies of hyperkeratotic papules. On examination these papules all seem to be definitely follicular, a conical plug projecting from the dilated pilo-sebaceous follicles. On the trunk there are large numbers of papules (Plate XXVI), some of them clustered closely so as to form a patch, with general redness and some scaling.

On the palms and soles there is considerable hyperkeratosis, with fissuring, and the formation of large scales, usually firmly attached. On the back of the hands the papules are usually easily recognised. Sometimes there is marked scaling (Plate XXVII).

The nails are thickened, brittle, often striated, and of an opaque

white or a dirty yellow colour. Pressure upon them sometimes causes pain.

The appearance of the skin on the back of the fingers is often characteristic. In this region the papules appear early and may persist for a very long time. The presence of a number of acuminate horny papules arising from the follicles on the back of the first and



FIG. 115.—Pityriasis rubra pilaris.

Note the scaling, the ectropion, and the expressionless countenance.

second phalanges may be regarded as almost pathognomonic of pityriasis rubra pilaris.

The mucous membranes are unaffected. The disease is characterised by recurring outbreaks of lesions which may remain local or affect the whole body. An attack may last a few weeks, or for months or years. A remission of the disease may be followed by an exacerbation; or the patient may get rid of one attack and remain free for a considerable time, only to relapse again. The palmar and plantar lesions are the most obstinate.

PLATE XXVII



PITYRIASIS RUBRA PILARIS

Note the scaling and the ridged arrangement of papules

Histo-pathology.—All the layers of the epidermis, but especially the stratum corneum, are thickened. Keratinisation is complete, and the horn cells do not contain nuclei. The granular layer is present. The pilo-sebaceous follicles are dilated, and are plugged with cones of laminated horn cells, which arise from a proliferation of the epidermic cells lining the mouth of the follicle.

The blood-vessels of the papillary layer are dilated, and round them there is sometimes a small-celled infiltration.

Prognosis.—As to ultimate recovery the prognosis is good ; but a patient should be warned as to the likelihood of relapses and the possibility of a recurrence.

If the feet or hands are seriously affected, their condition may interfere with the patient's usefulness after the main part of the eruption has disappeared.

Differential Diagnosis.—The condition may readily be confused with *Lichen planus*, with *psoriasis*, or with a combination of both. But Lichen planus is intensely pruriginous, and is never associated with a condition of general erythema and pityriasis. In psoriasis the scales are much larger and more abundant, and the palms and soles are not affected nearly so often as is the case in Pityriasis rubra pilaris.

Treatment.—Arsenic has been recommended ; but I have had the best results from the internal administration of Liquor Ammon. Acetatis and salicylate of soda.

Glandular therapy may be tried, with thyroid or a polyglandular preparation. Locally, ointments containing salicylic acid and ichthyol or weak percentages of tar may help, and alkaline baths add greatly to the patient's comfort.

Care must be taken not to use too strong or irritating applications, lest one convert the case into a generalised exfoliative dermatitis.

As there has been much confusion between this disease and exfoliative dermatitis, it will be convenient to deal with the latter now.

Generalised Exfoliative Dermatitis : Pityriasis rubra (Hebra)

Definition.—Generalised exfoliative dermatitis is an acute, sub-acute, or chronic disease of the skin characterised by general redness of the integument, and copious desquamation of large lamellar papery scales, the underlying surface being smooth.

Etiology.—The cause is unknown, but the disease may arise spontaneously (primary exfoliative dermatitis), or supervene upon some pre-existing skin disease, *e.g.* generalised eczema, lichen planus or psoriasis, or it may follow intensive treatment with the arseno-benzol derivatives, or local applications of mercury or chrysarobin (secondary exfoliative dermatitis).

In the fatal cases of the Hebra type (primary exfoliative dermatitis), it has been suggested that the disease is of tubercular origin.

A more likely explanation is that all the primary cases depend upon some hidden septic focus, and the absorption of some bacterial foreign protein.

In the secondary cases, the determining cause is probably local irritation acting on a susceptible skin.

Symptoms and Course.—The primary variety is not often seen, and is very fatal. It begins with prodromal symptoms of malaise, headache, etc., and is febrile from the first. It is the same disease as the Pityriasis rubra of Hebra. The secondary variety, if due to chemical irritants, applied either locally or administered intramuscularly or intravenously, is generally universal. If it supervenes upon any other skin affection it sometimes spares a part of the integument, and upon this it is often possible to find typical lesions of the preceding disease (*e.g.* lichen, psoriasis, etc.).

The earliest symptom is usually slight itching, so transient or so mild that it often escapes notice. This is followed by redness or erythema appearing on the upper part of the trunk and in the flexures of the joints, from which it spreads in the course of a few days all over the body. At the end of a week or ten days the scaling stage is established. The whole integument is a deep red, often with a livid tinge which deepens to a violaceous hue, especially on the thighs or legs. This darker hue is often more visible when the limbs are dependent, and the venous return is somewhat retarded. The skin is somewhat thickened, and covered with large, white, dry, quadrilateral scales, attached at one edge and separated at the others. Desquamation is profuse, and every morning the patient's bed contains large quantities of shed scales. Beneath the scales the dusky red skin is smooth, shiny, and dry, and can be rendered temporarily pale by pressure. The integument is very itchy, and scratching may give rise to moist lesions. The hair falls, though not usually completely; the nails become discoloured, thickened, striated, brittle, and are often shed.

As a rule there is some rise of temperature, with an evening exacerbation; the urea output in the urine is diminished; the patient loses weight and strength, and may be reduced almost to a skeleton.

In some cases death supervenes from exhaustion after a few months. In others there is gradual improvement, sometimes with relapses, and the disease may last for several months or for more than a year before recovery takes place. If the disease is secondary to psoriasis or any other skin affection, it is interesting to note that as the exfoliating dermatitis subsides, lesions of the original disease crop up again and are easily recognisable. Sometimes—and this is more particularly true of cases following upon the administration of arseno-benzol derivatives—

there is marked, extensive, and persistent dusky or brown pigmentation of the skin after the acute dermatitis has disappeared.

Histo-pathology.—The whole epidermis is thin. The cells of the stratum corneum, being rapidly formed, are imperfectly keratinised, and, as the skin is in a condition of acute inflammation, there is marked capillary dilatation, with some small-celled infiltration.

The Prognosis is bad in the primary cases, and favourable, though always somewhat grave till one can see signs of definite improvement, in the secondary cases.

Treatment.—General: Rest in bed; warm coverings; easily digested but nourishing diet.

If treatment with baths is feasible it adds greatly to the patient's comfort. For this purpose Whitfield recommends potassium sulphide (5ii. to thirty gallons). As a local application Stephen Mackenzie's lotion is excellent:—

R. Glycerini Plumbi Subacet.
Glycerini, āā. ʒi.
Aq., ad Oi.
M.

This may be dabbed on and allowed to dry; or the limbs and parts of the body more seriously affected may be swathed in gauze wrung out of it. If oiled silk or G.P. tissue is used to keep in the moisture, the skin tends to become macerated. As the disease subsides I have found ichthyol gr. v. to the ounce, in an ointment consisting of equal parts of Ung. Acidi Salicylici, and Ung. Zinc. Oxidi, of great service.

Internally, quinine in doses of i.-ii. grains thrice daily should be given; or, more particularly if the case is one consecutive to mercurial or arsenical treatment, intramime should be injected intramuscularly in doses of 2½ c.c. once a week. This remedy will sometimes convert an apparently hopeless case into a hopeful one. Less striking in apparent results, though also of great service, is sulphur administered by the mouth, preferably in colloidal form.

As it is possible that some cases of primary exfoliative dermatitis depend upon a hidden septic focus, this should always be sought for with care. If such a focus can be found, a vaccine should be prepared and administered.

CHAPTER XIX

A GROUP OF SKIN AFFECTIONS OF UNKNOWN CAUSE CHARACTERISED BY IRREGULAR KERATINISATION

Keratodermia : Keratoses

DISEASES characterised by Keratodermia, or an increase in the thickness of the stratum corneum, constitute a definite group. This increase may depend upon a more rapid keratinisation of the prickle-cells (the true keratoses), or on the more rapid formation of prickle-cells (acanthosis) (Dubreuilh).

Keratodermia may be localised (*e.g.* corns, callosities, and warts), or diffused and general as in ichthyosis, or definitely follicular as in Darier's disease.

Ichthyosis, or "Fish-skin Disease"

Definition.—Ichthyosis is a congenital, chronic, and incurable disease of the skin affecting chiefly the cells of the stratum corneum, whose arrangement gives rise to the appearance of fish scales.

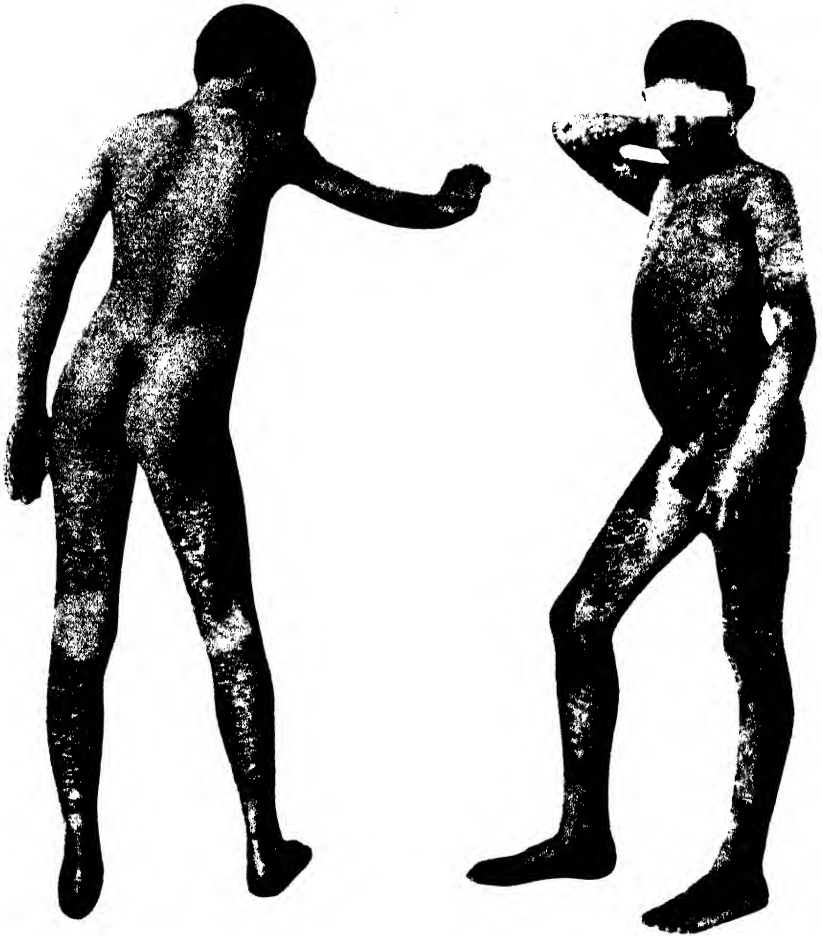
Etiology.—It is due to a congenital anomaly, and is frequently hereditary, though the hereditary tendency may skip a generation.

The disease is rarely evident at birth, and may not manifest itself for some years, though in rare cases it may develop during intra-uterine life, and the child is born with well-marked ichthyotic changes in the skin. The precise cause is unknown, but for some years I have suspected that congenital syphilis may play a part, as I have met with three cases in different families, when there was no antecedent case of ichthyosis discoverable in the family history, but where there was a definite history of syphilis. Colcott Fox and others have recorded cases associated with atrophy of the thyroid gland.

Histo-pathology.—In severe cases there is marked, in mild less-marked, thickening of the stratum corneum. The stratum granulosum is usually absent. The prickle-cell layer is thin. The papillæ are short and thick. The sweat and sebaceous glands may appear normal; more often they are few and atrophic.

Symptoms and Course.—In mild cases there may be nothing

PLATE XXVIII



ICHTHYOSIS

Note the normal skin over flexures of joints

more than an abnormal dryness (*Xerodermia*) and coarseness of the skin, with a tendency to desquamation.

In a well-marked case the disease affects chiefly the extensor aspect of the limbs in their whole extent, the trunk being usually affected in a lesser degree. The skin over the flexures of joints, *e.g.* at the front of the elbow, the back of the knees, the groins, the armpits, the folds of the neck, is generally unaffected (Plate XXVIII, A and B). So also is the skin over the genital organs, the face, the palms, and the soles, though the face sometimes shows branny desquamation, and the palms and soles are covered by a thickened epidermis, which, however, retains its elasticity and is not covered by the characteristic scales. The scalp is frequently involved, and the hair on the crown of the head and in the frontal region is diminished. The skin is dry and rough, and covered by little horny plates or scales, yellowish-brown or greyish-green in colour, and presenting a recognisable similarity to fish scales; hence the name *Ichthyosis*. The colour of the scales is partly due to the difficulty the sufferer has in washing himself, but partly also to the presence of pigment in the cells. In very severe cases the scales may be so thick and massive as to suggest crocodile skin, and this resemblance is heightened by the presence of deep furrows or cracks, produced by movement of the inelastic skin, between the large scales. As already stated, the disease is congenital, though, as a rule, it does not manifest itself till between the first and second year of life, but in some cases the first appearances are met with in the second or third month. Once the disease has declared itself it continues to persist, with exacerbations and retrogressions, all through life. As a rule it reaches its maximum degree of intensity at puberty. In the summer months there is sometimes a considerable shedding of the ichthyotic scales, which, however, return when the hot season is over.

The desquamation which follows an attack of scarlet fever gets rid of the scales temporarily, but they recur.

In mild cases there are no subjective symptoms, but in severe cases, in consequence of the diminished elasticity of the skin, one frequently meets with painful cracks and fissures over the joints, and in cold weather, in consequence of the lessened activity of the sweat glands, there may be some itching of the dry skin.

Diagnosis.—In a well-marked case the diagnosis presents no difficulties, the appearances being highly characteristic. It is only in the mildest cases that any difficulty may arise, and then the history of the development of the condition in the early years of life, and its long persistence, together with the presence of a similar condition in other members of the family, should afford definite clues.

Complications.—Owing to the atrophy of the sebaceous glands there is an absence of sebum, the natural lubricant of the skin. The

absence of this lubricant, and the consequent dryness of the skin, renders it more vulnerable to injuries from without. Cold weather, or strong soaps, may produce fissures and cracks, and an eczematous condition may be temporarily superimposed upon the ichthyosis. This is, however, usually confined to exposed parts such as the hands.

Very rarely true psoriasis has been met with as a complication.

Prognosis.—So far as life and general health are concerned, the prognosis is good ; so far as a cure of the disease is concerned, it is very unfavourable, one may almost say hopeless. It is only right that, before marrying, an ichthyotic subject should be frank with his or her life-partner, as the hereditary transmission of the condition is a well-established fact.

Treatment.—Though the disease is incurable, something may be done to ameliorate the patient's condition. For this purpose frequent hot baths may be used, the patient employing a super-fatted soap. Resorcin soap may be used to help in the removal of the scales. After each hot bath the patient should anoint himself with the following ointment :—

R. Glycerini Amyli.

Unguenti Acidi Salicylici, āā. p.e.

This tends to render the skin soft and pliable. The baths should be taken more often in winter than in summer.

In winter the hands should be well protected with warm gloves, and an application every night of the following ointment will lessen the tendency to "chapping" :—

R. Ung. Glycerini Plumbi Subacet.

Ung. Acid. Salicylici, āā. ʒss.

Sig. Apply to the hands after washing with hot water every night.

As internal remedies cod-liver oil, arsenic, and thyroid substance may be used, but none of them seem to do much permanent good. Polyglandular extracts may also be tried. Where possible, sufferers from ichthyosis should winter in a warm climate.

FOETAL ICHTHYOSIS ; HARLEQUIN FOETUS

This rare condition requires brief mention. Its exact relationship to ichthyosis is still undecided. The infant is born with the disease in full evolution. The whole surface of the skin is covered with large thick plates and scales of horny substance, which are separated from each other by deep furrows covered with thin epidermis. The skin seems to be too small for the body ; the face is drawn ; the skin over the nose is taut ; there is severe ectropion, and the child cannot close its mouth. The result is an extraordinary appearance. The parchment-like skin on the limbs and trunk impedes movement, and the limbs are kept semi-flexed. Such children are usually born prematurely, and die after a few days or hours. As their lips are immobile they cannot suck.

In somewhat milder cases of this formidable condition, the child may live in a condition of misery for a few years ; or in still milder cases the child may survive and grow up, but it remains ichthyotic.

ICHTHYOSIS HYSTRIX ; LINEAR NÆVUS ; NÆVUS UNIUS LATERIS

Definition.—A congenital condition of unknown cause characterised by the appearance in lines or streaks, usually unilaterally, of warty excrescences, often brown or black in colour and covered with scales. The condition may be visible at birth, or it may only attract attention when the child is two or three years old. The line or lines may be short or long, and may run the whole length of a limb.

Unless they give trouble from their position, it is best to leave these excrescences alone. The best treatment is excision.

Rarely, epithelioma has been known to develop upon a linear nævus.

**Darier's Disease ; Psorospermiosis follicularis vegetans ;
Acné sébacée cornée ; Keratosis follicularis**

Description.—This rare disease, first differentiated by Darier, begins with the formation of small pinhead papules, topped with a thick, hard, brownish scale. These papules occlude the dilated sebaceous follicles, from which they project like a cork from a bottle-neck. On removing the scale or crust a soft mass can usually be squeezed out of the patulous follicle. The lesions may be found all over the body, but their sites of election are the face (Fig. 134), the scalp, the axillæ, the abdomen, the skin over the sternum and in the intervertebral furrow. There is a marked tendency to symmetrical distribution, and the extensor aspect of the limbs is affected later. At first isolated, the lesions rapidly tend to agglomerate, and large plaques are formed, dusky red or brownish in colour, rough to the touch, studded over with horny excrescences and small greasy scales. In places, especially in moist regions like the armpits or the groins, the lesions vegetate actively, and one may meet with large papillomatous reddish masses, sometimes almost fungating, with a greasy, dirty, and fetid discharge.

If the hands and feet are affected, the nails become thick, friable, and striated. On the dorsum of the hands and feet the lesions tend to assume a warty appearance. On the palms and soles the lesions are yellowish or brownish points, visible through the epidermis.

The disease, which is very chronic, begins usually in adolescence. According to Darier 50 per cent. of cases develop between the ages of eight and sixteen ; but it frequently does not appear till adult life. There is little disturbance of general health, unless suppuration supervenes, or the fetid discharge from the vegetations in axillæ or groins proves weakening. There is usually some itching, which now and then may be very severe.

Men are more subject to the disease than women, and in some cases an hereditary tendency has been established

Diagnosis.—The condition is not difficult to diagnose once the characteristic lesions have developed. Confusion may arise with *Seborrhæic dermatitis*, but the horny plugs projecting from the dilated follicles differentiate Darier's disease.

Prognosis.—The prognosis is good as to life, but the chronic



FIG. 116.—Darier's disease.

nature of the disease must not be forgotten. It may last for many years, and treatment seems of little avail.

Etiology.—Darier believed the disease to be due to psorosperms, which he believed he saw as *corps ronds* in the epidermic cells. Boeck, however, suggested that these bodies were epidermic cells which had undergone abnormal hypertrophy and irregular keratinisation. They appear as rounded bodies surrounded by a strongly refractile horny membrane with a double contour. Boeck's opinion that these are simply degenerated cell forms is now generally accepted, and the

microscopical discovery of these cells settles the diagnosis. The cause of the disease is unknown.

Treatment.—This is of little avail. Arsenic has been given over long periods, and some improvement has been noticed. Salvarsan has been used without any good result. Locally, ointments of salicylic acid, resorcin, β -naphthol, chrysarobin, and hyd. perchloride may all be tried, and some improvement has followed the application of X-rays. The comfort of the patient may be promoted, and the fetid smell may be controlled, by prolonged baths of boracic acid or weak cyllin, followed by the application of salicylic acid ointment, and the use of a dusting powder of zinc and talc.

Acanthosis nigricans

Description.—This rare disease is characterised by two chief symptoms : (1) roughening of the skin, with the appearance of scattered or close-set papillomatous excrescences ; and (2) dark pigmentation. Its sites of election are the neck and the genito-anal region, but the axillæ, the umbilicus, the hands, the flexures of the elbows, the face, and the feet are frequently involved.

In the affected areas the characteristic roughening is primarily due to an exaggeration of the natural furrows and ridges of the skin, which presents a corrugated appearance. The affected skin is dark brown or greyish-black in colour, and is thickened and rugose. Upon this, pedunculated or sessile warty excrescences develop singly or in groups. There is never any scaling. The nails are friable and the hair often falls. The disease is unaccompanied by pain, but sometimes there is itching.

The disease, which is commoner among women than men, usually occurs between the ages of thirty and forty, and is, in about 50 per cent. of cases, associated with malignant disease in the abdominal cavity, sometimes near the suprarenals. Küttner says that the disease may be idiopathic, occurring in young persons suffering from familial obesity or diabetes, or some other disturbance of development. It runs a rapid course if associated with a malignant tumour in abdomen, and ends in cachexia and death in 2-4 years.

Diagnosis.—The greater pigmentation and the sex incidence help to distinguish this condition from Darier's disease, and the warty growths mark it off from Addison's disease.

Histologically one finds evidence of a chronic inflammation in the papillary layer, with destruction of elastic tissue, and a marked proliferation of the prickle-cell layer, with wart-like overgrowths of the horny layer. The deeper layers of the epidermis are loaded with pigment. Large melanoblasts lie round the blood-vessels.

Treatment.—X-ray therapy may be tried. No known remedy is of any avail, but occasionally, in cases associated with malignant

tumour, the removal of the growth has been followed by disappearance of the cutaneous affection (Mulzer).

Glandular therapy may be tried.

KERATOSIS PILARIS ; XERODERMIA PILARIS ; ICHTHYOSIS FOLLICULARIS

Definition.—**Keratosis pilaris** may be regarded as a form of ichthyosis in which the pathological changes are confined to the pilo-sebaceous follicles, leading to their atrophy.

Etiology.—Most often the disease is hereditary, and it is not infrequently met with in families in which there is the taint of ichthyosis. But it is a very widespread condition, and about 33 per cent. of people have suffered from it at some period of their lives. The precise cause is unknown.

Pathology.—The pilo-sebaceous orifices are plugged by horny cones, which project deeply into the dilated follicles. Each plug has a lanugo hair attached to it. The papilla of the hair and the sebaceous gland-tissue are atrophied through pressure.

Symptoms.—Essentially this is a disease of childhood or adolescence. As a rule it is first observed between the ages of two and three years. It tends to persist until puberty, when it frequently undergoes some exacerbation, often disappearing spontaneously in later life. The lesions are found chiefly on the extensor aspect of the limbs, chiefly on the outer aspect of the upper arm, but they may be met with on the forehead and face, the back, the neck, the scalp ; but never on the palms or soles, as there are no sebaceous follicles there. The grouping of the lesions gives rise to the development of patches of rough nutmeg-grater-like skin, which yield a characteristic sensation on touch.

There are no subjective symptoms, except occasionally some pruritus in cold weather.

Diagnosis.—The condition may be confused with **Lichen pilaris**, but lichen pilaris does not usually occur till the age of puberty or later, while Keratosis follicularis is met with most frequently in the early years of life.

Treatment.—The same remedies as are used in the treatment of ichthyosis may be employed. The free use of soft soap is often advantageous.

LICHEN SPINULOSUS VEL PILARIS

A rare disease, met with occasionally in childhood, affecting boys chiefly, and characterised by the development in the pilo-sebaceous orifices of horny plugs which project above the level of the skin in a filiform spine. The cause of the condition is not known. The lesions are met with chiefly on the neck, the buttocks, the limbs, the face. The lesions are usually of the same colour, or nearly so, as the normal skin. The mouth of the follicles is raised in a kind of pout round the spinous horny projection. There are usually no subjective symptoms.

Treatment is by the use of frequent baths, and emollient and keratolytic ointments containing salicylic acid.

POROKERATOSIS (MIBELLI)

This is another rare disease characterised by the appearance of hyperkeratotic excrescences, which appear especially on the extensor aspects of the limbs and the dorsum of the hands and feet, as well as on the trunk, face, scalp, and genitals. The individual lesions are small, conical, warty papules,

brown or dirty grey in colour. Their shafts are buried in the sweat glands. The excrescences spread peripherally, until colonies of them are formed, ranged circularly or irregularly. The outer edge of such a colony is raised (like a low wall), and is dry and yellowish-brown in colour; the centre is somewhat depressed, atrophic-looking, and slightly scaly; or the skin in the centre may look quite normal except for a little brownish pigmentation.

Histologically the condition is seen to depend on a marked hyperkeratosis round the mouth of the sweat ducts, but the hyperkeratosis may spread to adjacent parts of the skin.

The cause is unknown, but there would seem to be a strong hereditary factor at work. Mibelli regards it as a dystrophy of the epidermis, affecting primarily the orifices of the glandular elements, especially the sweat glands.

Treatment.—Excision of the affected parts, or destruction of the lesions with CO₂ snow, or by electrolysis.

Keratoderma of the Soles and Palms (Tylosis plantaris et palmaris)

This is a rare condition, congenital in origin, and not infrequently affecting several members of a family. In a case which came under my observation I was able to trace the disease back through three generations, both sexes being affected.

Description.—The lesions begin to appear in the early months of life, being preceded by a persistent erythema or violaceous discoloration of the palms and soles, which is followed by a hypertrophy of the horny layer which may involve the whole extent of the palms and soles and attain a great degree of thickness. Sometimes the keratoderma is not so widespread, but is confined chiefly to points of pressure. The skin is hard and thick, cannot be pinched up or wrinkled, and in colour resembles dirty tallow. Frequently in winter it becomes the seat of deep and painful fissures. In summer the horny layer is sometimes macerated by perspiration, which in some of these cases is excessive. In the absence of painful fissures there are no subjective symptoms. The condition may be so severe as to interfere with the patient's industrial efficiency. Fine movements of the fingers are impossible, and sometimes the condition of the soles is such that walking becomes difficult. But in most cases the sufferer can earn a living.

Treatment.—The condition is incurable, though palliative remedies often afford relief. Of these soft soap, salicylic acid ointment, or an ointment of equal parts of Ung. Acid. Salicyl. and Ung. Glycerini Plumbi Subacetatis, or an ointment containing 5 per cent. of resorcin and salicylic acid, are probably the best. X-ray therapy may also be tried.

Acquired Keratoderma

In addition to the above congenital form of keratoderma, there are acquired varieties which affect the palms and soles, and which may

be due to syphilis, psoriasis, chronic eczema, or even to chronic arsenical poisoning. In these varieties, however, there is not usually a complete involvement of the skin, there being patches of normal integument between the areas of hyperkeratosis. Recently a considerable number of cases of hyperkeratosis of the skin of the soles have been reported in patients suffering from gonorrhœa. To this condition has been given the name—

Keratoderma blenorrhagica

It affects the heels, the balls of the toes, and the edges of the soles particularly, and is usually associated with gonorrhœal arthritis or iritis. The lesions may not be confined to the feet, but appear also on the trunk or limbs. The affected skin is thickened, and on it a number of sloe-coloured or nut-brown pea-shaped nodules of varying size develop. These nodules give on pressure the sensation of being empty blisters, covered by a tough parchment-like roof. On opening them they are found empty, or they may contain a little cheesy material. Usually, in these cases the nails are thickened.

In spite of the fact that it is stated that gonococci have been found in these nodules, I am inclined to believe that some of the cases reported have been syphilitic or psoriatic hyperkeratosis in a person suffering from gonorrhœa.

Treatment with salicylic and mercurial ointments will effect a cure. In some of the reported cases the condition is stated to have disappeared spontaneously with the curing of the gonorrhœa.

KERATODERMIA PUNCTATA

Of recent years a number of cases have been reported by Galloway, Brauer, Chalmers and Kamar, Matsumoto and others of a variety of keratoderma characterised by the development on the palms and soles of multiple, definitely circumscribed areas of hyperkeratosis. The cause is unknown. In some cases the disease would seem to be hereditary; in others this is not so. As a rule, the lesions appear soon after puberty, and are distributed symmetrically on the palms or soles. Sometimes palms and soles are affected in the same patient. The fingers and toes are often involved on the palmar or plantar aspect. There are at first no subjective symptoms, though when the lesions are well developed there may be pain in walking or on pressure. The lesions consist of flat, round, pin-head or pea-sized horny implantations surrounded by normal skin. Frequently there is a depressed centre.

The condition is very obstinate, and treatment is of little avail. Glandular therapy and X-rays may be tried. The horny implantations may be kept soft by the use of:—

R. Ung. Acidi Salicylici.

Ung. Glycerini Plumbi Subacet., āā. p.e.

M.

Sig. Apply night and morning.

CHAPTER XX

SCLEROSIS, OR HARDENING OF THE SKIN

Sclerodermia

Definition.—Sclerodermia is a disease characterised by changes consisting in a hardening and thickening of the skin and subcutaneous tissues, and terminating sometimes, though not invariably, in atrophy.

The condition occurs in three chief forms: (1) *circumscribed sclerodermia or morphæa*, (2) *diffuse sclerodermia*, and (3) *sclerodactyly*.

Etiology.—The cause is unknown. The condition is more common among women than men. As the disease is often associated with rheumatic pains or actual joint-rheumatism, it has been suggested that it may depend on the same cause. A toxæmia from some focal infection of an unknown kind has also been suggested. Others believe in a neuro-trophic origin. There is a considerable volume of opinion that it may depend on some diminished activity of the endocrinous glands, especially the thyroid or the pituitary. Previous inflammatory changes in the skin due, *e.g.* to erysipelas, have also been suggested, and in some cases of circumscribed sclerodermia which I have seen, the patients have associated the condition with an injury.

Symptoms and Course.—(1) **Circumscribed sclerodermia** is usually limited to one or more patches, which occur chiefly on the trunk, particularly in the neighbourhood of the breast in women, the face, neck and arms. The disease begins, usually after some prodromal symptoms of itching or sometimes stabbing pain, as a circumscribed round, oval, or band-like slightly œdematous patch. The patch spreads peripherally. It is somewhat hard to the touch and looks shiny, as though it had been brushed lightly with copal varnish. The affected skin cannot be pinched up in folds, and its mobility on the underlying structures is diminished. The colour of the lesion is at first a delicate pink, surrounded by a lilac-coloured peripheral zone, but as the lesion becomes older its centre assumes the yellowish-white hue of old ivory, stippled with brown spots, while the periphery tends to be pigmented brown. But the lilac border persists for a long time outside the brown edge. Gradually the skin undergoes atrophic changes, and becomes more anchored to the subcutaneous tissue. The functions of the

sweat glands in the affected area are sometimes seriously interfered with, and when the atrophic stage is reached they may be destroyed. The sebaceous glands often escape. Scleroderma affecting one side of the face may involve not only the skin and subcutaneous tissue, but also the bone, and produce the condition known as *hemiatrophia facialis*.

The disease usually runs a chronic course, and sometimes ulceration occurs. It may spread slowly, or it may undergo spontaneous arrest and almost entirely disappear, leaving fibrotic or atrophic changes behind. Or it may become stationary, and last for many years uninfluenced in any appreciable degree by treatment.

(2) **Diffuse scleroderma** is a variety in which large areas of the body are involved either by multiple isolated patches of the disease, or by areas of wide extent. Almost always symmetrical, it affects the limbs, particularly the upper limbs, rather than the face. It is attended by more subjective disturbances than the circumscribed variety, *e.g.* general rheumatic pains and local sensations of cold or burning, and sometimes formication. Sometimes, though rarely, there is anæsthesia of the affected skin ; but there may be hyperæsthesia.

The skin is thickened and bound down, and is of a dirty yellowish-grey tint. Its rigidity and lack of flexibility are characteristic. It does not pit on pressure. If the skin over the joints is affected there is serious interference with movement, and contractures may result. The disease may penetrate and involve the muscles, the subcutaneous tissue disappearing and the skin becoming bound down to the muscles, leading to their atrophy through compulsory disuse and partial fibrosis. If the face is attacked it becomes expressionless and immobile, and there is great difficulty in talking and eating.

(3) **Sclerodactyly** is diffuse scleroderma affecting the fingers or toes. The hands are most often involved, and the disease is usually symmetrical. Some of the digits may escape. The prodromal symptoms are pains in the fingers, with cyanosis of the finger tips (*acrocyanosis*) and local asphyxia, or "dead fingers." The condition greatly impairs the usefulness of the hands, as contractures, interference with mobility, ulceration, and destruction of the digits may ensue.

Histo-pathology.—The epidermis is thinned, the stratum mucosum is in some cases atrophic, in others hypertrophied and deeply pigmented. In the true skin there is a great increase of fibrous connective tissue. There is a marked small-celled infiltration round the blood vessels, which compresses them. Changes in the nerve fibrils in the skin have been noted, but they are not constant.

Diagnosis.—In a well-developed case the diagnosis is easy, but *myxœdema* may be mistaken for the diffused form. In *myxœdema*, however, the thickening of the skin and subcutaneous tissues is less

hard, and there is always mental dullness, which is absent in sclerodermia.

The circumscribed form may be confused with *thickened scars*, but the history and the absence of the characteristic lilac edge should dispel doubt.

Prognosis is unsatisfactory. The localised variety is not dangerous to life, but it may be permanent.

The diffuse variety, through its interference with joint movements, etc., leads to serious interference with the patient's activities, and sometimes, if the trunk is extremely involved, to a condition of rigidity,



[Photo by Dr. Oram.]

FIG. 117.—Sclerodactyly.

as though the sufferer had been sewn up in a leathern corselet. Many of these patients die of tuberculosis, exhaustion, or pneumonia.

Treatment.—General: Protect the patient against sudden changes from heat to cold, or vice versâ. Protect the local variety from injury, lest ulceration occur. Combat rigidity by local massage and movement. Internally, potassium iodide, arsenic, mercury, and salicylate of soda, have been tried without much effect. Probably the best results are obtained from glandular therapy, a mixed preparation, or thyroid substance alone being given. Izar * claims to have cured a case with injections of pituitary extract.

* *Riforma Med.*, 36, 482, 1920.

Injections of fibrolysin and thiosinamin have been advocated, but I have never seen improvement follow their use.

Hot baths have been recommended, and they certainly add to the patient's comfort, especially if the affected skin is afterwards massaged with olive oil.

X-rays, ultra-violet rays, and baths of radiant heat have all been recommended.

For the circumscribed patch Brocq recommends electrolysis, the needle attached to the negative pole being inserted at intervals of $\frac{1}{8}$ inch all round the periphery, and a current of medium strength (2-3 milliamp.) being allowed to pass for 20-30 seconds at each insertion. I have seen good results from this.

Sclerema neonatorum

This is a very rare congenital condition, usually present at birth, though it may not be noticed till later. When first observed, the lesions usually consist of lumps or masses in the subcutaneous tissue. They are irregular in outline and hard to the touch. A. M. H. Gray * believes that the disease is due to "some congenital disturbance of fat metabolism or some toxic influence causing damage to the fat cell." It is in no sense a true sclerodermia, for in that disease the changes in the fat cells are secondary and due to pressure, the primary change being in the collagen bundles.

In Gray's case there were cysts in the fatty masses. Harrison † has studied the chemistry of subcutaneous fat in cases of sclerema. He found evidences of chronic inflammation with giant cell formation. In the fat were numerous anisotropic crystals. The melting-point of the fat was raised, and the total cholesterol was increased.

Sclerema neonatorum is almost always fatal; or, rather, possibly the condition occurs in children already doomed to die from athrepsia.

* *Archives of Derm. and Syphilology*, December 1926.

† *Archives of Diseases of Children*, June 1926.

CHAPTER XXI

DISEASES AFFECTING THE HAIR

The Structure of the Hair.—Hair is found all over the skin, except on the palms and soles and the dorsum of the terminal phalanges of the fingers. It is found in special quantity upon the scalp, over the pubis, and in the axillæ in adults, and in the pre-sternal region and face in males.

Hairs are of epithelial origin, and consist of specially modified horn cells. The shaft of a hair is that part which extends outwards beyond the surface of the skin, while the whole of the buried portion is known as the root. The root terminates in a bulbous expansion, the hair bulb, which is invaginated at its lower end over the papilla, which is derived from the corium. The papilla is the source of all new cells added to the hair, only a short portion of which, close to the papilla, is a living structure. In the whole of its extent above the surface of the skin, where it emerges from the hair follicle, and for some seven-eighths of its length within the follicle, the hair is a dead, insensitive structure. The living portion of the hair is nourished from the blood stream through the papilla.

The structure of the hair-shaft is simple (Fig. 118). Externally, there is a layer of imbricated horny cells, constituting the *cuticle*; internal to this is the *cortex*, which bulks most largely in the hair, and which consists of flat, spindle-shaped

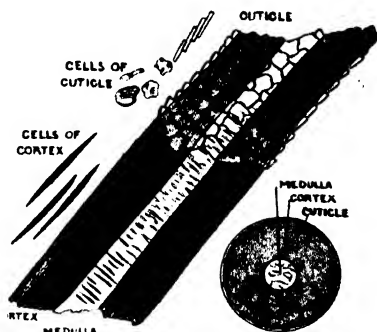


FIG. 118.—The structure of the hair-shaft. Modified from Jackson and McMurtry's "Diseases of the Hair."

epithelial cells containing pigment, and sometimes fusiform nuclei.

Running through the centre of the cortex is the *medullary canal*, which is filled by a column of superimposed cells, nucleated near the papilla, but which lose their nuclei as they become more distant from it. Sometimes the medullary cells contain pigment. Lanugo hairs have no medulla.

Both cortex and medulla may contain air spaces. On transverse section a hair is elliptical or oval in shape; straight hairs are more circular; curly hairs more elliptical.

The structure of the hair-root is somewhat more complicated than the

structure of the shaft (Fig. 119). The root is enclosed in the hair follicle, which consists of two layers, an *outer sheath*, derived from an involution of the Malpighian layer, and an *inner sheath* derived from and continuous with the horny layer of the epidermis. This inner sheath is also continuous with the hair bulb, and if a hair is pulled forcibly out the inner or "root-sheath"

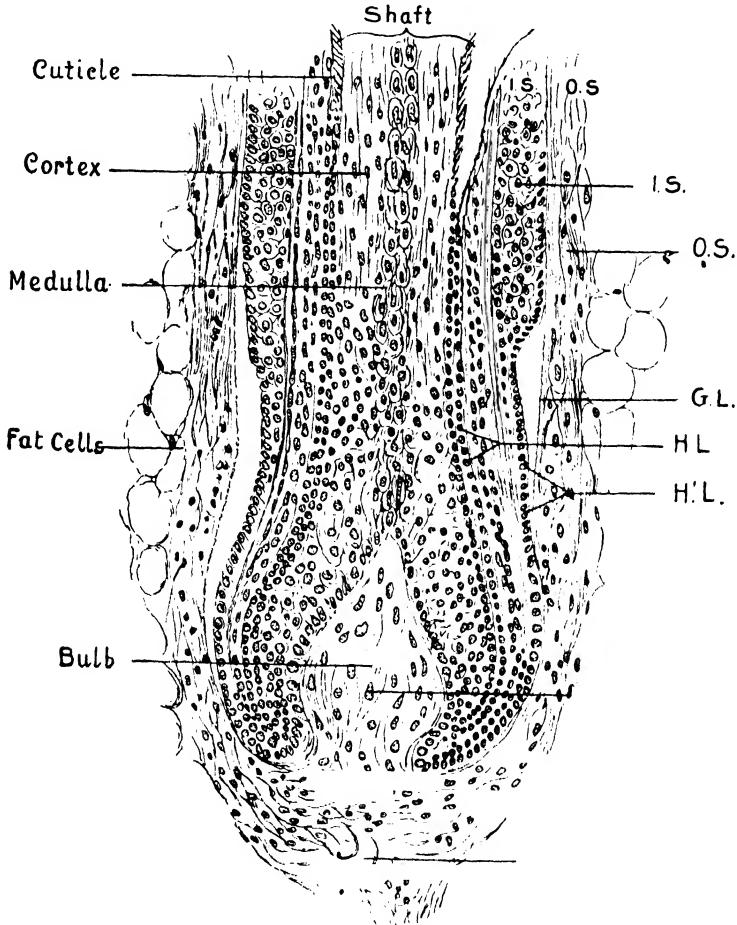


FIG. 119.—The structure of the hair root.

Longitudinal section through human hair follicle. (After figure in Brass's "Atlas of Human Histology.") I.S., inner root-sheath; O.S., outer root-sheath; G.L., glassy layer; H.L., Huxley's layer; H'L., Henle's layer; P., papilla; V., vessels.

generally comes away with it, and may be recognised with the naked eye. If we remember that the outer root-sheath is derived from an invagination of the Malpighian layer, and recall its structure, we shall have no difficulty in recognising that the outer root-sheath must consist of (1) an external layer of columnar cells (derived from the stratum germinativum), (2) several layers of polyhedral cells (derived from the prickly cell layer), and (3) a single layer of flat cells. As we descend the follicle and approach the papilla, the external

root-sheath diminishes in thickness. The internal root-sheath begins at the neck of the papilla, and extends upwards to the mouth of the follicle. It consists of three layers: (1) the outer layer, or Henle's layer, consisting of a single row of polyhedral cells with nuclei which are lost as the layer approaches the follicular opening; (2) the middle layer, or Huxley's layer, also consisting of a single row of polyhedral cells containing keratohyaline; (3) the inside layer, consisting of a single row of columnar cells.

Just as the hair, in the depths of the follicle, near the papilla, is an active living structure, becoming dead ere it emerges from the follicle, so the cells of the root-sheath, in all its layers, become less actively protoplasmic and more horny as they approach the surface, losing their nuclei.

The average life of a hair is 1600 days.

Many hair follicles have attached to them a few fibres of non-striped muscle—*arrectores pili*—by which, in some persons, the hairs may be made to stand on end.

CANITIES, OR GREYNESS OF THE HAIR

Premature greyness of the hair may be congenital, and run in families. In such cases usually only an isolated tuft of the scalp hair is affected. If the greyness is general in a congenital case it is usually a part of the symptom-complex of albinism; though the hair alone may be affected without the other symptoms of "pink eyes" and fine pinkish skin. In most cases, however, canities is acquired. It is a natural accompaniment of age, in which case it usually does not begin till after the fortieth year. But in the premature case it may begin as early as the twentieth year, and be complete by the twenty-fifth year. This tendency may be hereditary, or occur without hereditary predisposition in consequence of illness or psychic depression. Seborrhœa oleosa is, in some cases, the precursor of premature greyness. Sudden greying of the hair may occur in consequence of severe nervous shock, but cases in which the hair has turned white in a single night are met with more often in fiction than in real life. I doubt if they ever occur.

Treatment.—The dermatologist has nothing to do with hair dyes, except to advise his patients against them. Some, especially those containing para-phenylene-diamine, may set up a violent and intractable dermatitis. Treatment should be on tonic lines, with iron, arsenic, and polyglandular preparations.

Alopecia

Alopecia may be congenital or acquired. The congenital form is extremely rare. The acquired form—due to many causes and of many types—is not uncommon.

Cicatricial Alopecia

Cicatricial alopecia may be congenital, and is then due to adhesion of some part of the fetal membranes *in utero* to the scalp. Acquired cicatricial alopecia may be produced by any condition capable of destroying the hair follicles: *e.g.* wounds, burns, over-dosage of X-rays, suppuration in the hair follicles, lupus erythematosus, syphilitic ulceration of the scalp, favus, etc.

A careful examination of the condition and a review of the history will make the diagnosis clear.

With the ordinary cicatricial alopecias should be mentioned a somewhat rare condition, the—

Pseudo-pelade of Brocq.—The cause is unknown, but it is probably organismal. The condition affects children and young adults of both sexes—though males are more often attacked. The disease begins gradually, the first visible symptom being a little redness round the hair follicles. The hair falls, and a minute scar is left. More hair falls—and scar is added to little scar, the mischief spreading slowly and peripherally, leaving behind numerous white cicatricial patches, of irregular outline, but definitely margined, completely devoid of hair. There are no broken or ! hairs. Adjacent patches may fuse, so that curious geographical figures may be produced. (See also *Folliculitis decalvans*, p. 45.)

The diagnosis is often difficult. The condition must be distinguished from *Lupus Erythematosus* of the scalp. A help is that *Lupus Erythematosus* in that region is usually associated with lesions of *Lupus Erythematosus* elsewhere.

Treatment is unsatisfactory. Tar and sulphur ointments, β -Naphthol ointment, and antiseptic lotions may be tried; and ionisation with zinc.

Diffuse Alopecia, due to pityriasis capitis, or seborrhœa sicca, has already been dealt with.

A diffuse alopecia follows many acute diseases, such as influenza, or attends conditions of general ill-health, e.g. anæmia, depression, neurasthenia, etc. In all cases of diffuse loss of hair one must make a careful examination of the scalp to exclude local causes such as *pityriasis capitis*. When these are excluded the line of treatment to follow is (a) a general tonic one, with the administration of iron, arsenic, polyglandular preparations, etc.; and (2) stimulating applications such as ammonia, tincture of capsicum, tincture of cantharides, etc.

Recently some observations have been made on the treatment of alopecia of different kinds by the local application of corneous material, and good results have been claimed. Kapp* has used a solution of keratin (7 per cent. of keratin in ammonia and alcohol) with beneficial results.

Alopecia areata

Definition.—Patchy baldness. The title is derived from the Greek word for a fox (ἀλώπηξ), as foxes frequently exhibit patches denuded of fur.

Etiology.—There is a sharp division of opinion as to the cause of the disease. Some hold that it is microbic in origin, and therefore contagious. Others believe that it is neuro-trophic in origin, and

* *Deutsch. Med. Wochenschrift*, 47, 296, 1921.

therefore free from infectivity, while others hold that it is due to the toxins from some focal infection, *e.g.* in the tonsils. H. W. Barber, H. Leslie-Roberts and others have advanced strong proofs in favour of the latter theory. All cases, however, are not due to focal sepsis. In favour of a microbic origin the following points are noteworthy :—

1. It sometimes occurs in epidemics, *e.g.* in industrial schools. Some years ago I saw twenty cases in one small home for girls.
2. More than one member of a family may suffer at the same time.
3. On microscopical examination of “ mark of exclamation ” hairs by the ether-potash method, a small, somewhat rod-like organism may often be discovered. This was called by Dr. George Thin, who first described it, the *bacterium decalvans*.

This organism, however, does not fulfil all Koch's postulates.

As to its neuro-trophic origin, it should be remembered :—

1. As Lenthal Cheatele has pointed out, on the face one may meet with bald patches corresponding exactly to the distribution of a particular nerve twig, *e.g.* it is not uncommon to see alopecia affecting the skin on one or both sides of the chin in the area of the mental branch of the fifth nerve.
2. On the scalp it is occasionally possible to associate the area of baldness more or less closely with the distribution of a certain cutaneous nerve.
3. An attack may follow nervous overstrain. I have known a physician who developed patches of alopecia in the occipital region whenever he was working hard for an examination. I have seen alopecia areata begin in patches and very rapidly involve the whole scalp, producing complete baldness in a soldier who had been exposed to a nerve-racking bombardment in the course of which he was buried for a time. It should, however, be said that he had had a previous attack in childhood.
4. Alopecia has been met with in association with eye-strain,* and long ago Jacquet attributed it to reflex irritation from a decayed tooth. Modern knowledge, however, would regard the decayed tooth as a septic focus rather than a source of reflex irritation.

To sum the matter up, one may say that the actual determining cause of alopecia has not been established, but that many predisposing causes have been recognised. In children, Sabouraud has noted want of circulatory tone, abnormal fatness, and choreiform movements as precursors of alopecia. There is undoubtedly, in some cases, a slight hereditary factor at work, but this is not invariably traceable.

Pathology.—In spite of naked-eye appearances there is no actual atrophy of the scalp. The areas affected seem to be thinner than the normal scalp, but this is not due to atrophy but to the disappearance of the hair roots, which contribute largely to the thickness of the scalp. At the margin of the denuded areas, what are known as “ mark of exclamation ” (!) hairs are discovered. They are not absolutely

* Goodwin Tomkinson has reported several cases of alopecia areata associated with strabismus in the same family.

limited to cases of alopecia, as they may be met with in old cases of ringworm, and in some cases of seborrhœa, and after treatment of the scalp with X-rays. They should be looked for just at the edge of the hair surrounding the alopecia patch. They are short hairs, which taper gradually from the distal extremity to the scalp, and are usually lighter in colour at the proximal end. Sometimes instead of ! hairs one finds "clubbed" hairs, which suggest bulrushes along the margin of a lake. The manner of formation of these mark-of-exclamation hairs is probably as follows. Whatever may be the immediate



FIG. 120.—Alopecia areata.

Boy aged 14. Note that a large anterior patch of baldness, and a patch on the vertex are becoming confluent.

cause of the alopecia there is a diminution of the vitality of the hair papilla. It cannot support a hair of normal length. The hair therefore undergoes fracture some distance from the scalp. But the diminished vitality of the papilla is not capable of building up a hair of normal thickness, so that as the hair grows it becomes progressively thinner, and progressively less pigmented ere it falls out. This produces the typical ! hair, which may be recognised with the naked eye, and removed for microscopical examination.

Sometimes over the denuded area one sees little black masses filling the hair follicles, and one may think of "black-dot" ringworm.

But, on microscopical examination, these black masses are found to be devoid of ringworm fungus. They are the debris of shed hairs.

Signs and Symptoms.—The disease may be met with at all ages and in both sexes, but it is probably most frequent in children. It is characterised by the appearance, primarily upon the scalp, of one or more circumscribed areas completely or partially denuded of hair. The areas may be situated on any part of the scalp, though they are sometimes arranged in a roughly symmetrical way. They tend to increase in size and number until in severe cases a condition of ALOPECIA UNIVERSALIS is reached, and the hairs disappear from the whole scalp, and possibly from the whole surface of the body (Fig. 121). The patches on the scalp are roughly circular in shape, and the denuded skin is smooth, shiny, and, if there is any excess of seborrhœa, greasy in appearance. Sometimes the whole of the affected area is not com-

pletely bare. What appears to be normal hair may occupy its centre. Sometimes the alopecia takes a band-like form and may extend completely round the margin of the scalp, leaving a denuded fillet-like area of varying breadth (*Alopecia of Ophiasic type*). This form is often very rebellious to treatment.

Diagnosis.—Care must be taken to differentiate between *Ringworm*, the small bald areas left by *Favus*, *Lupus Erythematosus*, and *Alopecia areata*.

The “*black-dot*,” or bald form of ringworm, may readily be confused with alopecia. Here the age of the patient helps one to a clinical

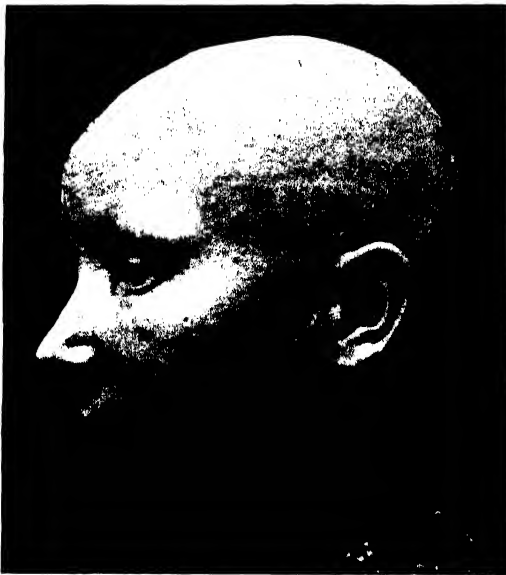


FIG. 121.—*Alopecia totalis vel universalis*.

decision. Ringworm of the scalp is almost never met with in persons over eighteen years of age : alopecia occurs at all ages. The microscope, however, affords the most definite proof. If the case is one of ringworm, the typical fungus will be found in large quantity in any of the small hairs extracted from the affected area.

The small bald areas left by *Favus* are depressed, usually circular, somewhat reddish in colour, and the adjacent hair has the characteristic “cocoa-nut fibre” appearance.

Lupus Erythematosus of the scalp is a rare condition. As a rule it is associated with other manifestations of the disease, *e.g.* on the face, or the borders of the ears. The bald areas it produces are depressed with raised, red, and slightly scaly edges.

Prognosis.—The most satisfactory cases take three to four months for their cure. Many require eighteen months to two years, and some are incurable. Into this latter category fall cases with the following history. A patient has alopecia as a child: in early manhood he contracts syphilis; later he has a second attack of alopecia. This second attack may be permanent.

Cases commencing just before puberty are often favourably influenced by the bodily changes occurring at that period, and tend to undergo spontaneous cure. Cases which have lasted from the tenth year onward, will often begin to improve at puberty. The disease tends to recur. Most patients have more than one attack, often at long intervals.

In any case occurring below the age of forty, however extensive, the prognosis is fairly good. A very large proportion of all cases respond favourably to treatment carried out assiduously. After forty, the prognosis is not so favourable, though even then most cases get well.

Treatment.—**General treatment** should be directed to improving the patient's general health. Debility, anæmia, and any septic focus should be dealt with appropriately. Decayed teeth should be filled or removed.

Many cases in adults improve very rapidly if glandular extracts are administered. A polyglandular preparation is best.

Local Treatment.—This should be of a stimulating character. If the patches are small and not numerous, the application once a week of pure carbolic acid, followed by the application of methylated spirits (to lessen the escharotic effect) as soon as the patient complains of burning, often serves very well. Care must be exercised in the use of carbolic acid in the case of children. A similar stimulating effect is obtained by applying tincture of iodine once a week. I have known a patient cure himself, when other remedies have failed, by the daily application of "black ammonia." Linimentum Terebinthinæ Aceticum rubbed in nightly often produces good results; but many scalps react severely. Lactic acid gives excellent results, and may be used in different strengths up to 20 per cent.

Norman Walker considers it to be the best remedy, and uses it in this formula :—

R. Acidi lactici, ʒi.-ʒi.
Ol. Ricini, ʒii.
Spirit. Vini, ad ʒiv.
M.

This should be rubbed in daily, with more and more vigour as the scalp becomes used to it.

In hospital practice I find sulphur ointment gives good results.

Sometimes I add grs. xx. of salicylic acid to the ounce. But greasy applications have disadvantages for lady patients as they tend to mat the hair. In these cases such a lotion as the following will be found of great service :—

R. Liq. Ammonizæ fort., min. xxx.

Tinct. Capsici.

Tinct. Cantharidis, āā. ʒi.

Glycerini, min. xx.

Aq. Rosæ, ad ʒi.

M.

Sig. To be well rubbed in every night.

Some authorities have a strong faith in chrysarobin, which is best applied in the form of the “Chrysarobin Salve Stick.” It has the disadvantage of staining linen indelibly, and it often sets up an erythema associated with enlargement of adjacent lymphatic glands, and if not used with great care may set up a conjunctivitis of considerable severity. In spite of these disadvantages, no case of alopecia should be utterly despaired of until chrysarobin has been given a thorough trial.

When the hair begins to grow again, it is devoid of pigment, and appears white. It gradually assumes its normal colour. The administration of iron and arsenic may possibly hasten this. Where alopecia has involved the whole scalp it is often advisable, when down begins to return, to shave it off every fortnight, continuing stimulating treatment in the interval. This provokes a stronger growth of hair.

Lastly, alopecia may be treated by small repeated doses of the X-rays; by the ultra-violet rays from a mercury vapour lamp, a sufficient dose being given once a fortnight or oftener to produce a redness of the scalp; or by ionisation with zinc.

It is well, while treating the individual patches, to apply a stimulating lotion to the scalp generally. This prevents extensions.

If there has been a loss of the eyebrows and eyelashes in a case of alopecia, it is not usually necessary to apply any local treatment to restore them. They begin to grow again as the scalp gets better.

Alopecia on the face is best treated with Unguentum Sulphuris. On the body, general treatment gives the best results, but friction with a bath glove will often hasten recovery.

Hirsuties : Hypertrichosis

Definition.—By *hirsuties* or *hypertrichosis* we understand an excessive and abnormal growth of hair on parts of the body where, normally, only lanugo hairs are found.

The condition may be widespread or universal—producing the so-called hairy men, or “dog-faced” men of the freak show, in which

case the hypertrichosis is usually situated on a molar growth ;—or local and partial. A tuft of hair in the lumbo-sacral region often marks the site of spina bifida occulta. Local hirsuties in women, affecting the face, may be the cause of much mental distress to the sufferer.

Hair on the beard, whisker, and moustache areas is a secondary male sexual characteristic. At and after the climacteric, many women develop a small crop of hair on the upper lip and chin ; but the real sufferers are those women who develop hair upon the face and neck between puberty and the age of thirty. The underlying cause in many instances is, I believe, a lack of balance between the secretions of the endocrinous glands, whereby there is a suppression or diminution of the activity of the essentially feminine glands. In many instances it will be found that girls and young women suffering from hirsuties suffer from irregular and scanty menstruation. Some of them are flat-breasted, angular, and of a definitely male type.

An accessory cause in the production of abnormal hair growth on the face in women is, I am convinced, the use of face-creams, especially after the circulation in the skin of the face has been whipped into activity by fast motoring, without the protection of a thick veil, or by exposure to the wind in one or other of the active outdoor games in which women now participate.

Hirsuties on the face is common among female inmates of lunatic asylums ; and the condition is capable of reducing an otherwise normal girl to a state of profound melancholia. Possibly the melancholia depends upon the same abnormality of endocrinous secretions as the hirsuties.

Treatment is difficult and unsatisfactory. I have known two women who suffered from hirsuties of the chin and cheeks lose it after marriage and motherhood.

Some patients certainly improve after the administration of ovarian substance, and this should be given a trial in all cases.

Many depilatories have been recommended, but all irritate the skin, and do no more than remove that portion of the hair visible above its surface. Freshly prepared barium sulphide mixed with an equal quantity of zinc oxide or other inert powder is probably the best. The powder is rubbed up with a little warm water into a thick cream, and then spread thickly upon the affected part with a wooden paper-knife. It is left on for two to five minutes, according to the sensitiveness of the skin, and then scraped off with a blunt knife moistened with olive oil. The digested hairs come off with the paste. The skin should then be sponged with warm water, anointed with cold cream or boracic ointment, and dabbed with calamine lotion. The results are only temporary : the hair soon grows again, and the process has to be repeated with the danger of permanent coarsening of the hair and damage to the skin.

Many patients content themselves with plucking out the hairs with forceps, or breaking them off by friction with pumice-stone. Both procedures give only temporary relief, and require some pluck to

continue. Dark hairs may be bleached and rendered less visible by the use of peroxide of hydrogen.

Permanent epilation may be produced by the X-rays, but there is considerable danger of permanent atrophy of the skin, with the development at a later date of unsightly telangiectases. The method should only be used as a last resort, and the treatment must be entrusted to an expert.

Electrolysis in capable hands sometimes produces good results, but in my opinion the passage of the electric current through the skin sometimes stimulates the lanugo hairs into activity. The method is as follows. The positive electrode is applied to a thick pad of Gamgee tissue soaked in salt solution, and bound firmly to an arm. A Schecht's needle-holder, mounted with a fine beading needle, is attached by a flexible cord to the negative pole. The patient should lie on her back, with the area of operation well illuminated with diffused daylight. The operator chooses the hair, and examines it carefully to make sure of the direction of its axis in the skin. He then passes the point of his needle for $\frac{1}{8}$ – $\frac{1}{4}$ inch into the hair follicle, catheterising it, and switches on the current. The current should be of $\frac{1}{2}$ – $\frac{3}{4}$ milliamperé, and should be allowed to pass for 20–25 seconds. During its passage, if the needle is correctly placed, bubbles of gas will be seen to rise in the hair follicle. After withdrawing the needle, wait for a moment to allow the hair to loosen, and then lift it out of the skin with forceps. If it comes without resistance, it has been treated adequately. If one has to pull to remove it, the papilla has not been destroyed, and the hair will grow again. Eighteen to twenty hairs may be removed at a sitting; but, if a local anæsthetic is used, as many as forty to sixty may be destroyed at a time. Even in the most experienced hands about twenty per cent. of all the hairs removed return. The treatment is tedious, and there is danger of producing scars (sometimes thickened and ugly) if the current is too strong, or if it is applied too long.

In severe, extensive cases shaving with a safety razor may be recommended.

Hypertrichosis on the arms in women is best dealt with by bleaching the hairs with peroxide of hydrogen. Hypertrichosis between the breasts in women is best left alone. It can easily be hidden.

DISEASES OF THE HAIR DUE TO FUNGI

Tinea tonsurans and **Favus** have already been dealt with (pp. 134, 152).

Lepothrix is a rare disease of the hair, which is most often met with in the axillæ, though it may affect the hairs in the scrotal, inguinal, and perineal regions. The affected hairs are of a lighter colour than adjacent unaffected ones, are swollen, have a gelatinous appearance, and are studded over with a number of bulbous swellings. The swellings consist for the greater part of masses of foreign matter attached to the hairs. Sometimes the hairs are brittle, and break readily. The disease affects the hair-shaft only, the bulb remaining free. As a rule, there are no subjective symptoms; but there may be slight itching and erythema, with hyperidrosis. It may affect both sexes after puberty, and is more frequent in blondes than brunettes.

Lepothrix is believed to be of parasitic origin, though no definite micro-organism has been decided upon. Staphylococci, a diplococcus, and a Gram-positive bacillus, as well as fungi, have all been described as occurring. Probably lack of cleanliness and excessive perspiration are contributory causes.

Castellani has described a similar condition, met with in the tropics under the title "*Trichomycosis flava, rubra et nigra*," of the axillary region, in which the deposits on the hairs were yellow, red, and black.

Treatment.—The parts should be shaved, and thereafter the skin should be well bathed with antiseptics, and rubbed with sulphur ointment. Unless thorough disinfection is carried out the disease tends to recur in the new hair.

PIEDRA NOSTRAS

A rare affection of the hair characterised by the development of hard, smooth, brownish nodes or sheaths upon the hair of the moustache or beard.

The disease is due to a fungus. The hairs remain unaltered. The fungus is a trichosporon, with oval spores called by Behrend "*Trichosporon ovoide*."

Treatment is by scrupulous cleanliness, frequent washing with soap and water, and the application of a spirituous solution (1-2000) of bichloride of mercury, or collosol argentum.

Piedra proper (*Trichomycosis nodularis*, *Trichosporosis tropica*) is met with chiefly in South America, and never in this country.

ATROPHY OF THE HAIR

Fragilitas crinium: a condition in which the hair tends to split either at its distal end or transversely.

It may occur as a symptom in other diseases, whether local or general, *e.g.* ringworm and the systemic fevers: or it may be idiopathic. The idiopathic variety may be due to some atrophy of the hair papilla, or to mechanical causes such as the traction of hatpins, the use of hot curling irons, etc

Treatment.—The hair should be shortened, and the nutrition of the scalp should be improved by massage and stimulating applications.

Trichorrhexis nodosa.—In this condition, which is rare, but most common in the beard and whiskers, nodular swellings occur along the hair,



FIG. 122.—Trichorrhexis nodosa. (From Walsh's "Hair.")

which fractures through the swelling, and a brush-like expansion of the hair fibres at the site of fracture occurs. The cause is unknown, but the condition probably depends upon some nutritional defect, leading to an atrophy of the medulla at different points.

The disease is very rebellious to treatment. If possible, the beard—where the disease usually occurs, though it may also occur on the scalp in both sexes—should be kept shaved for a prolonged period. Stimulating and antiseptic lotions containing bichloride of mercury, resorcin, tincture of cantharides, etc., may be applied, and glandular therapy may be given a trial.

Monilethrix is a congenital and often hereditary condition in which the hair exhibits constrictions of its shaft at intervals. The hair breaks easily at the constrictions, and rarely attains a length of more than half an inch.

The cause is unknown, but probably the condition depends upon a nutritional defect.

Treatment is by stimulating applications and glandular therapy.

Two other conditions may be mentioned, viz. **Trichotillomania** and **Trichonodosis**.

Trichotillomania.—A habit developed by highly neurotic or insane persons of pulling or tugging at the hair. The skin from which the hair springs is often intensely itchy, and may be thickened or inflamed. The hairs are broken off, and temporary alopecia may result. Scalp, moustache, or beard may all be affected.

Treatment is disciplinary, and the application of an ointment containing an antiseptic agent, *e.g.* carbolic acid.

Trichonodosis is a condition in which the hair forms loops or knots spontaneously. The hair is usually dry and curly, and the condition is believed to be due to trauma from too frequent washing with strong soaps, singeing of the hair, curling with hot irons, etc. The treatment is prophylactic: avoid the cause.

CHAPTER XXII

DISEASES OF THE SKIN ASSOCIATED WITH THE SEBACEOUS GLANDULAR SYSTEM

The Sebaceous Glands

THE sebaceous glands are found all over the integument except on the palms and soles and the back of the distal phalanges. They supply an oily or fatty lubricant, sebum, to the skin.

They are situated more superficially than the sweat glands, and lie in the uppermost layers of the corium (see Fig. 1). They consist of simple tubules or pouches, which may be single, or more often arranged in clusters like a bunch of grapes.

They are surrounded by a thin connective tissue envelope, and are lined by nucleated spheroidal cells in several layers. The cells undergo fatty degeneration, those nearest the lumen of the gland containing the greater quantity of fat droplets. The glands open by ducts into the hair follicles and discharge their secretion of sebum, which contains olein, palmitin, stearin, and cholesterin, on to the surface of the skin.

The sebaceous glands are always connected with hair follicles, except on the mucous border of the lips, the prepuce, glans penis, and labia minora. The amount of sebum secreted by the glands varies with the age of the patient, his nationality, and the region of the body in which they are situated. Adults secrete more than young individuals, negroes more than whites, and the scalp, the middle of the face, and the presternal and interscapular regions are those where most sebum is discharged, for in these regions the glands are most numerous.

Anomalies of Secretion of the Sebaceous Glands

The sebaceous secretion with which the skin is oiled is derived from a fatty degeneration of the epithelial cells which line the sebaceous glands.

Seborrhœa is the name given to any excessive production of sebum by these glands. Seborrhœa is divided into two varieties: (1) *Seborrhœa oleosa*, in which the excess of secretion is definitely of an oily nature; and (2) *Seborrhœa sicca*, in which, in addition to a certain amount of sebaceous secretion, there has been a desquamation of the horny cells of the epidermis and an extrusion from the sebaceous glands and their ducts of a large number of epidermic cells which have not undergone complete fatty degeneration. This so-called seborrhœa sicca, as it affects the scalp, has already been dealt with under the title of Pityriasis capitis (p. 165). Seborrhœa may occur on any part of the

body where sebaceous glands are met with, but its sites of election are the scalp, the face, the front of the chest over the sternum, and the interscapular region.

Seborrhœa oleosa produces a characteristic greasy appearance of the skin. Sometimes the skin is so greasy that it appears to have been smeared lightly with an ointment. Occasionally the excess of secretion is so great that tiny beads of oil may be seen exuding from the patulous orifices of the sebaceous glands on the forehead, the sides of the nose, or the adjacent parts of the cheeks. In these severe cases there is little doubt that some of the oily secretion is supplied by the sweat glands.

Etiology.—Seborrhœa depends upon a functional over-activity of the sebaceous glands. The *microbacillus of Sabouraud*, which he believed to be the determining factor, has been shown by Schamberg to occur in individuals whose sebaceous glands do not over-secrete. This organism, together with the *morococcus of Unna*, so called from the mulberry-like clusters in which it is found grouped in the microscopical field, and the *bottle-bacillus of Unna*, are usually found in all severe cases of seborrhœa and may contribute something to the phenomena of the clinical picture; but I believe their rôle to be a secondary one. The functional over-activity of the sebaceous glands depends, in all likelihood, upon some lack of equilibrium between the endocrinous glands at puberty. Constipation, indigestion, and other general conditions probably contribute to, but do not cause, the condition. Barber and Semon* found a marked and constant hyper-acidity of the urine in soldiers suffering from seborrhœic dermatitis. They concluded that the seborrhœic state is a manifestation of relative acidosis.†

Seborrhœa oleosa capitis is characterised by the appearance on the scalp of one or more patches, of varying extent, of greasy scales. In severe cases the whole scalp may be involved. A disease of adult life, it begins as a rule at puberty. Beginning gradually, it may persist for a while unnoticed. By-and-by the accumulation of scales and the microbic growth which they favour give rise to itching, which leads to scratching, which in turn may produce secondary lesions.

The accumulation of scales upon the scalp interferes with the nutrition of the hair, and may set up a dermatitis. Sooner or later every patient suffering from Seborrhœa capitis begins to complain of *defluvium capillorum*, or falling of the hair. This falling may be more or less general, but it is rarely, if ever, so marked as the loss of hair which results from seborrhœa sicca (pityriasis capitis, *q.v.*, p. 165).

* *Brit. Med. Journal*, 2, 245, Sept. 1918.

† Darier believes that the seborrhœic state depends on a diathesis which he calls "la kérôse." It is characterised by a muddy skin, large pilo-sebaceous follicles, and a modification of the keratinisation of the epidermis with a lowering of the resistance of the epidermic cells to bacterial infection.

Men are much more prone to seborrhæic baldness (*alopecia seborrhæica*) than women. Indeed, in women it is excessively rare, and is never so severe as among men. This probably depends upon some difference in the endocrinous-glandular secretions of the two sexes. It is a well-known fact that eunuchs do not go bald.

Diagnosis.—Seborrhœa of the scalp is easily diagnosed, but in young adults a small patch may be confused with *ringworm*. A microscopical examination should at once set all doubts to rest. *Psoriasis* is another disease with which it may be confused. But psoriasis is rarely met with on the head alone. The skin over the elbows or knees is almost certain to be affected. Further, in psoriasis the scales are larger and imbricated, and, as a rule, there is no accompanying loss of hair. Again, psoriasis affecting the scalp rarely extends on to the forehead, while in extensive seborrhœa the forehead is almost always involved (*Seborrhæic corona Veneris*).

Prognosis.—The prognosis in a case of seborrhœa is favourable as to the immediate attack ; but as the condition depends upon some aberration of function of the sebaceous glands, given suitable conditions the same aberration may recur, bringing the old symptoms in its train. To effect a cure treatment must be thorough and prolonged, but even then recurrences are not infrequent.

Alopecia seborrhæica is curable if tackled early enough. If a patient waits until it is well established the prognosis is not good.

Treatment.—The object in view in treating seborrhœa of the scalp is twofold : (1) to remove the accumulated secretion—an excellent nidus for microbic growth ; (2) to inhibit the excessive activity of the sebaceous glands.

In severe cases, where the accumulation is massive, it must be softened with oil, for which purpose a 1 per cent. oleate of mercury and olive oil mixture, or an oil containing salicylic acid (grs. xx. ʒi.), may be employed. The day after this application the scalp should be washed thoroughly with spirituous soap lotion.

If one treatment of this kind is not sufficient to remove the bulk of the débris, it must be repeated until the scalp shows signs of clearing up.

In milder cases it may not be necessary to employ the preliminary treatment with oil. Once the scalp is fairly clean, efforts should be directed to the second object, viz. the lessening of the activity of the glands. For this purpose there is no remedy like sulphur, and the preparation of sulphur which gives the best results is the precipitate. This ointment should be rubbed in every night :

R. Sulph. Precip., grs. xxiv.
 Acid. Salicyl., grs. xii.
 Paraffin. Mollis, ʒi.

It should be massaged systematically into the scalp with the fingertips, the hair being parted from frontal region to occiput, and the ointment being applied meticulously by a nurse or attendant. Successive partings of the hair, first to the left, then to the right, should be made till the whole scalp has been treated. The ointment should be allowed to remain on all night, and in the morning the head should be washed thoroughly with spirit soap lotion. Afterwards Brocq's hair-lotion may be applied, and the patient is able to attend to his business for the day :

R. Sulph. Precip., grs. xxx.
 Spirit. Camphoræ, ℥i.
 Glycerini, min. xxiv.
 Aq. Destillatæ, ad ℥i.

M.

Sig. Shake the bottle, and sprinkle over the hair before brushing.

If it can be carried out, the inunction with sulphur and salicylic acid should be performed every night for at least a week, the scalp being washed each morning. After the first week it will probably not be necessary to repeat the treatment more than twice a week, and after a fortnight, unless the case is a severe one, it will probably be enough to rub the ointment in once a week, about three hours before washing the scalp. But the sulphur and camphor lotion of Brocq should be used as a daily dressing. Many other remedies besides sulphur have been recommended for the treatment of seborrhœa of the scalp, and though they are of value none can displace sulphur from pride of place.

Tar in an ointment or lotion, resorcin, β -naphthol, bichloride of mercury, nitrate of mercury in a dilute ointment, may all be tried in obstinate cases. Success is only obtained by persistent and thorough treatment, whatever the remedy employed.

Seborrhœa of the face is best treated with a calamine lotion containing 2 grs. of Sulph. Precip. in the ounce. This may be followed by the application at night of this ointment :

R. Ung. Sulphuris.
 Ung. Zinci Ox., āā. p.e.

M.

Seborrhœa affecting the genitals is best treated by scrupulous cleanliness. Calamine lotion with sulphur makes an excellent non-irritating application for that form of balanitis due to the irritation of retained smegma, which is a variety of sebum.

Seborrhœic dermatitis ; Seborrhœides

Seborrhœic dermatitis may occur under two conditions. (1) As a direct extension downwards from a scalp affected with seborrhœa,

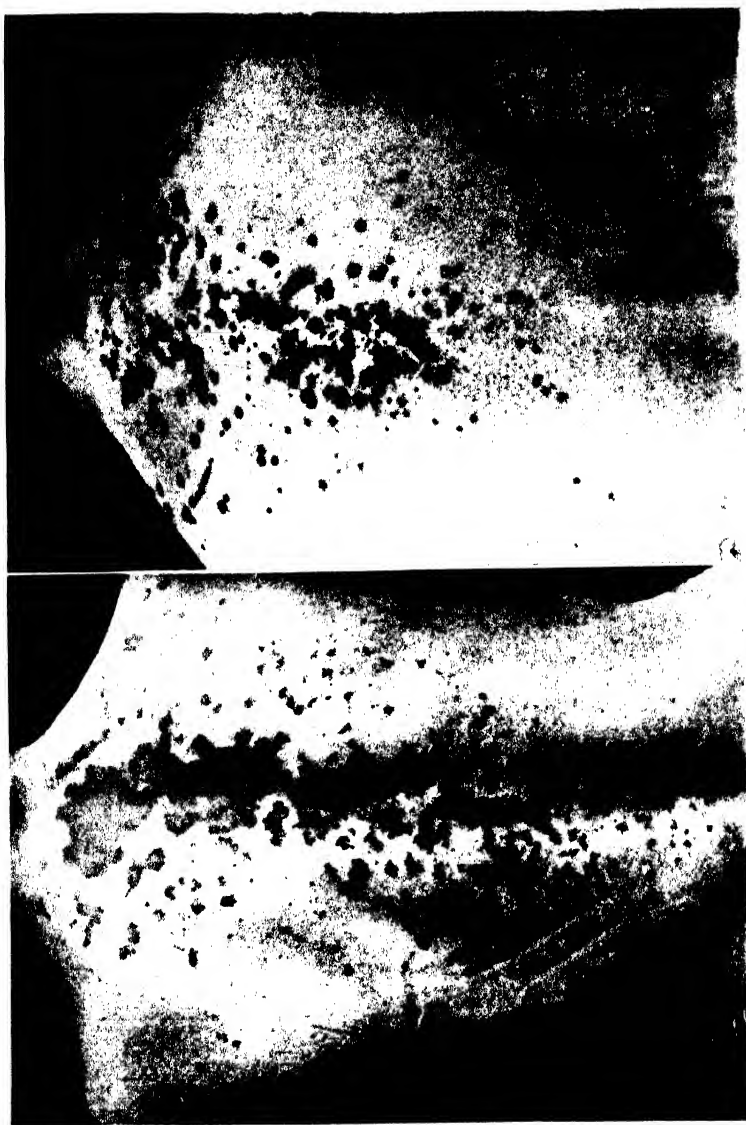
or (2) as a manifestation upon the trunk or other part of the body of the same functional irregularity (viz. over-production of sebum) as causes seborrhœa of the scalp. Attention has been called by Stiefler and others to the "greasy face" sometimes met with in cases of *encephalitis lethargica*. This is due to a localised, but intense, *seborrhœa oleosa*. An isolated lesion due to seborrhœa is known as a *seborrhœide*. Seborrhœic dermatitis may occur in two chief forms, viz. (1) *Ēczema seborrhœicum*, (2) *Seborrhœa psoriasiforme*.

On the scalp the eczematous type is the rule. There is redness, swelling, and discharge, and the mischief tends to spread. It spreads with a crescentic border beyond the hair margin, flows down behind and in front of the ears, leaving the skin covered with greasy, reddish-yellow scales, and sometimes cracked and fissured. It appears on the face, especially on the forehead, the nose, in the naso-labial angles, and on the chin, as reddish or fawn-coloured greasy lesions, which scale slightly. It may spread without any break right down the sides, front, and back of the neck on to the chest, where it produces an extensive reddish or fawn-coloured eruption covering the "chest-protector" area. Or it may break out on the chest without any direct extension from the scalp. This eruption on the chest and back used to be called "flannel rash," and there is little doubt that in susceptible persons the friction of rough flannels on the skin, and the heat they retain, predisposes to an outbreak in this situation. If one examine the area of eruption, it is usually possible, especially at the periphery, to recognise the individual lesions. They consist of rounded or oval lesions, reddish at the border, fawn-coloured in the centre, greasy in appearance, and greasy to the touch. By their confluence, extensive polycyclic lesions are produced, with definite margins covered with small greasy scales.

In an outbreak of seborrhœic dermatitis on the trunk, the lesions (seborrhœides) usually assume an eczematous or psoriasiform character.

1. Eczematous Form.—There appear over the presternal or interscapular regions (though the lesions may spread widely on trunk and limbs) in adults who normally have a greasy skin, a number of round, oval, or petaloid lesions, pink at first, which gradually spread, clearing up in the centre to form rings with reddish, greasy, finely scaling margins and fawn-coloured centres. The lesions tend to spread, and become confluent, the intervening border clearing up, so that polycyclic lesions, extensive in area and diverse in contour, are developed (Plate XXIX, A). It happens almost invariably that outside these large multiform lesions one can discover isolated lesions which give a clue to the nature of the disease.

2. Psoriasiform Seborrhœide.—This occurs on the chest and



(b)

SEBORRHOIC DERMATITIS

(a)

back, and is characterised by the appearance of a few discrete, small or large disc-like, round, or oval lesions (Plate XXIX, B). There is some degree of infiltration; the lesions are reddish and raised, and covered with hard, reddish-brown, or fawn-coloured scales that are sometimes greasy or which may be dry like the scales of psoriasis.

It is an invariable rule to find a condition of seborrhœa of the scalp in all cases in which we find seborrhœic dermatitis of any kind affecting the body. Some hold that a permanent cure of seborrhœa of the trunk is only possible if the associated seborrhœa of the scalp is cured as well.

The subjective symptoms associated with seborrhœic dermatitis are of little consequence, the chief being slight pruritus.

Diagnosis.—Seborrhœic dermatitis may be confused with *pityriasis rosea*, and with *psoriasis*.

But in *pityriasis rosea* the lesions are smaller, and have not the greasy appearance of lesions of seborrhœa, and are not attended by such active inflammation, nor do they tend to recur; while in *psoriasis* the scales are larger and more easily separated, and the lesions on the trunk are almost always associated with lesions over the elbows and knees.

Treatment.—All forms are curable with sulphur. In an acute case, affecting the trunk, instruct the patient to wear silk, linen, or cotton next the skin, and supply him with a calamine lotion containing 2-10 grs. of Sulph. Precip. to the ounce. When the acute stage begins to subside, one may give a sulphaqua bath twice or three times a week, and allow the patient to rub in Lassar's paste, to each ounce of which grs. x.-xx. of Sulph. Precip. have been added.

For an acute outbreak on the scalp I know no better remedy than a lotion of—

R. Collosol Sulphur (Crookes'), $\bar{\text{3i}}$.

Aq. Destillatæ, ad $\bar{\text{3viii}}$.

Sig. To be applied freely to the scalp, which should then be covered with lint soaked in the lotion.

When the acute symptoms have disappeared, a sulphur and salicylic ointment may be used (see p. 372).

X-ray therapy may also be used.

Treatment must be persisted in until the last lesion disappears.

Internal treatment should be directed to the correction of any constipation or other disturbance of the gastro-intestinal tract. Food should be light with plenty of fresh green vegetables and fruit. Excess of sugar or carbohydrates should be avoided. A seborrhœic dermatitis is sometimes influenced for good by the administration of large doses (15-30 grs. thrice daily) of potassium citrate, or by the ingestion of sulphur. One or two teaspoonsful of collosol sulphur

thrice daily after food will often be found advantageous, and sometimes an injection of $1\frac{1}{2}$ c.c. of intramine once a week will act like a charm.

Acne vulgaris

Definition.—Acne vulgaris is an inflammatory disease of the sebaceous glandular system.

Etiology.—In its production there are (a) predisposing causes, and (b) determining causes.

A. The chief predisposing causes are (1) *Age*. At puberty the sebaceous glandular system, in common with other glandular systems in the body, is in a condition of rapid growth and, frequently, of over-activity. The intimate relationship that subsists between the activities of the endocrinous glands and the fine balance of these activities have much to do with the maintenance of normal health. It is possible that the excessive secretion of the sebaceous glands in certain individuals at puberty depends upon some disturbance of the delicate equilibrium between the functions of the endocrinous glands. (2) *Sex*. Both sexes may be affected, but young males are more subject to the disease than girls. (3) *Aberrations from the normal* in the alimentary tract, e.g. decayed teeth with a consequent septic condition of the mouth, dyspepsia, and constipation. In almost every case of acne vulgaris the blood sugar-content is high. This indicates some abnormality of metabolism. (4) *Menstrual irregularities* from whatever cause arising. (5) *Anæmia*.

B. The determining cause is *Seborrhœa*, i.e. an excessive secretion of sebum. In my opinion the various micro-organisms found in a case of acne vulgaris are contributory causes only, responsible for some of the features of the disease, but not essential etiological factors.

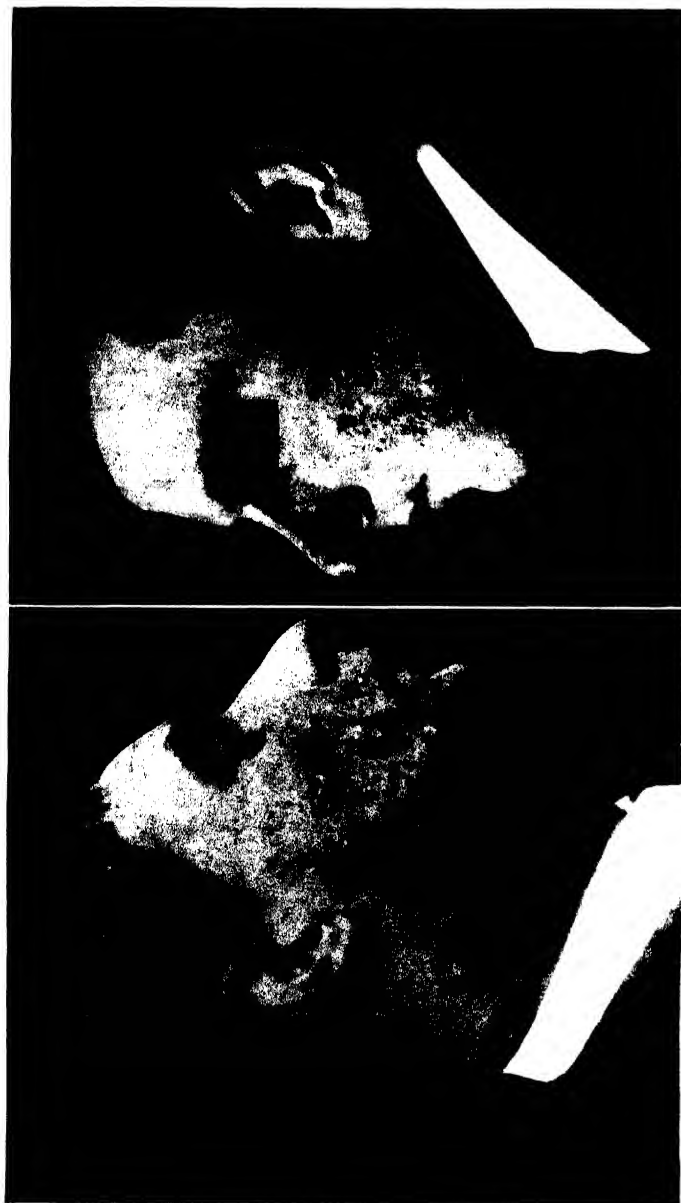


FIG. 123.—
Demodex
follicu-
lorum.

All people who suffer from an excessive secretion of sebum do not suffer from acne. If the sebum can obtain free exit through the sebaceous ducts, acne does not usually develop. The condition of acne is brought about primarily by a mechanical obstruction to the free escape of the glandular secretion.

This obstruction is caused by the *comedo*, or black-head, which consists of two parts: (1) an external part, which is visible, filling the mouth of the sebaceous follicle, and which consists of horn cells arranged in a laminated fashion like the layers of an onion; and (2) a deeper part consisting of sebum, and containing cholesterin crystals, and, frequently, an acarian parasite known as the *Demodex folliculorum* (Fig. 123). In the comedo it is usually possible to discover colonies of the *acne bacillus*

PLATE XXX



(a)

VICIN VULGARIS

(b)

Note the blackheads, pustules and abscesses

Note the blackheads, inflamed papules and pustules

or *microbacillus of seborrhœa*, a short, fine bacillus which stains readily with aniline dyes, and does not decolourise by Gram's method. Sabouraud holds that the acne bacillus is the cause of the excessive sebaceous secretion. A more probable idea is that the bacillus develops most readily where sebum is excessive.

If there is any suppuration, there is almost invariably a mixed infection with *Staphylococcus epidermidis albus* and an attenuated variety of *Staphylococcus pyogenes aureus*. W. N. Goldschmidt, in a series of cases carefully examined, did not find the staphylococcus pyogenes aureus in any acne lesion. He found exactly the same cocci in acne pustules as he found on the normal skin, and approximately in the same quantities. It is probable that the acne bacillus calls into play certain defensive mechanisms which result in the formation of the comedo. It finds its way into the open mouth of the follicle, and sets up an irritation which causes the epithelium to proliferate and throw off horny cells for the purpose of encysting the invader (Whitfield).

The irritation of the comedo, or of the growth of the organisms responsible for it, causes a proliferation of horny epidermic cells on the surface of the skin round the opening of the duct. This heaping up of horny cells narrows the external orifice of the duct so that there is some obstruction to the natural extrusion of the comedo.

In a well-developed acne lesion there is almost always some suppuration round and below the comedo, and in an advanced case there is a granulomatous deposit of varying size, containing giant cells, surrounding the initial lesions.

Signs and Symptoms.—Subjective symptoms, except in some special forms of acne such as the *Acné excoriée des jeunes filles*, are not marked. There may be some slight itching of the face, and when the inflammatory process is active some tenderness and pain, specially marked if the lesions are directly over bone, as on the forehead.

OBJECTIVE APPEARANCES.—The skin is usually greasy, and often coarse and muddy in appearance. On the forehead, nose, cheeks, ears, chest, and back one sees multiform lesions, ranging from the simple comedo unattended by visible inflammation, to the superficial cutaneous abscess (Plate XXX). As a rule all varieties of the lesions are met with simultaneously in the same case. Some of the lesions are actively inflamed; in others the inflammatory process is undergoing resolution without suppuration, the vivid red of the acute process settling down into an indolent and indurated bluish-red nodule. The indolent nodules are often the seat of recurring attacks of acute inflammation, and may go on to suppuration, discharging a variable quantity of pus and mucilaginous material.

After the age of twenty-five, as a rule, if the general health is good there is a tendency for the disease to subside spontaneously ; but any deviation from normal health, such as dyspepsia, constipation, menstrual irregularities, anæmia, or an irrational mode of life with late hours and scanty fresh air, or alcoholic intemperance, may seriously retard or completely prevent spontaneous cure.

Although there is this natural tendency to the disappearance of the disease, it is doubtful if any case recovers completely without treatment. Many cases tend to become chronic.

What might otherwise be a beautiful complexion may be ruined utterly by the scarring left after the disease.

Sometimes the comedo may develop to such a size as to leave behind it atrophic scarring due to pressure (Fig. 124). Where there have been repeated attacks of suppuration the affected areas are

likely to be deeply pitted, and often ugly nodular thickenings are left in the texture of the skin. The scars left on the back and chest are often pearly white, and I have on several occasions seen fibrous scars, cheloidal in character, on the chest.



FIG. 124.—Scarring left by comedones.

Actual abscess formation may occur, or one may meet with cyst-abscesses of varying size which discharge on incision a mixture of pus and sebaceous material.

Diagnosis.—The diagnosis presents little difficulty. The lesions are only met

with on those parts of the body where sebaceous glands are found, and tend to affect chiefly those regions of the skin where the sebaceous glands are naturally large, *e.g.* the face and forehead, the ears, the chest, and back. Sometimes the upper third of the arms may be affected, though this is rare. All doubts as to diagnosis will be eliminated if the observer will look for the characteristic initial lesion, the comedo, and trace the evolution of the disease with the aid of the other lesions, through the stage of comedo surrounded by an inflammatory nodule, to the comedo lost or hidden beneath the active suppurative processes of the acne pustule. In many cases all the types of lesions co-exist : comedo ; nodule ; pustule ; cutaneous abscess ; small suppurating sebaceous cyst.

Descriptive adjectives are applied to the different stages of acne, *e.g.*—

Acne papulosa, where the comedo is surrounded with slight inflammation, which causes a superficial elevation of the lesion above the surrounding skin.

Acne pustulosa, where superficial suppuration is added.

Acne indurata, where the accompanying inflammation is sufficient to produce a nodular, elevated, and hard thickening round the comedo.

These descriptive adjectives are, however, refinements in diagnosis, and from the point of view of the student and practitioner are of secondary importance.

Treatment.—GENERAL: One should always correct any inter-current affection. See to the teeth, the condition of the scalp, prescribing appropriate treatment for any seborrhœa there, and investigate the state of the digestion, and, in women, of the menstrual functions. Treat anæmia and constipation.

The diet should be such as the patient can digest easily. Greasy foods and highly spiced, made-up dishes should be avoided. Tea, preferably China tea, is better than coffee, and should be taken in small quantity, freshly infused and weak. Sugar in moderation may be allowed, but no sweets. Never forget that the blood sugar-content is invariably high in acne vulgaris. Cocoa is better avoided on account of its fatty content.

Pickles, chutneys, strong condiments, and alcohol should be forbidden. Pastry and new bread should also be forbidden. The patient should be instructed to masticate all food thoroughly, and to drink after meals rather than at meal-time.

A sedentary life should be corrected by regular periods of exercise in the open air.

LOCAL TREATMENT.—The aims of local treatment are: (1) To lessen the tendency to excessive secretion of sebum; (2) to remove comedones; (3) to bring suppurative processes to an end.

Where the inflammatory process is acute, a soothing form of treatment is indicated. Where the process is indolent, a more active form of treatment is advisable.

Sulphur and some of its derivatives have a marked power of lessening the secretion of sebum. A lotion of collosol sulphur—one part with seven or nine parts of distilled water—is of great use for this purpose. But very excellent results are obtained with Duhring's lotion. The strength of this may be varied according to the needs of the case. The formula I generally make use of is—

R. Zinci Sulphatis, ℥i.ss.
Potassæ Sulphuratæ, ℥i.ss.
Aq., ad ℥iv.
M.

The lotion contains a fine sediment, and when freshly prepared emits a strong odour of sulphuretted hydrogen. It is efficacious in three ways : (a) it lessens the seborrhœa ; (b) it induces desquamation, and so by clearing away the heaped-up horny cells round the orifices of the sebaceous ducts it facilitates the removal of the comedones ; (3) it controls suppurative processes.

The method of its application is important. The bottle should be well shaken, and some of its contents should be poured into a saucer. The application should be made by soaking a pledget of cotton-wool or a piece of lint in the lotion, and then dabbing it all over the face. The powder should be allowed to dry on the face, and should then be rubbed in with the dry hand. The process should be repeated three or four times a day. After a few days the skin loses its greasy appearance and begins to feel tight and drawn. At the end of a week or ten days it has begun to crack and peel off, and washing becomes painful. If the patient can be persuaded to persevere it is well to continue the process for ten days. At the end of ten days the following ointment should be applied at night :—

R. Glycerini Amyli.

Unguenti Acidi Salicylici, āā. ʒss.

M.

Sig. To be applied freely at night.

This gives immediate relief to the drawn, tight feeling of the skin, whose normal elasticity is quickly restored. But though the ointment is being applied at night, the patient should still continue to apply the lotion twice daily. It is remarkable how this combined treatment will influence the most obstinate acne, and after a patient has persevered with it for a few weeks, a skin that had been coarse, greasy, muddy, and studded over with blackheads and acne pustules, will be found to be clear, translucent, and healthy-looking ; the blackheads will be greatly diminished in number, and the pustulation will often have ceased. For acne of the back, shoulders, and chest, where the skin is coarser than on the face, the strength of the lotion may, if thought advisable, be increased, and the use of the mitigating ointment may be delayed beyond the ten days, which experience has taught me is the best time for beginning its use in cases of facial acne.

Alternative lotions are calamine lotion, to which may be added precipitated sulphur in varying proportions from 2–20 grs. to the ounce, or bichloride of mercury gr. i. in six ounces.

Another useful lotion is—

R. Lotio. Acidi Carbolici (1–20)

Lotio. Hydrarg. Perchloridi (1–1000), āā. p.e.

This yields a combination of carbolic acid (1-40) and Hydrarg. Perchlor (1-2000). It also produces desquamation, and in virtue of its strong antiseptic power rapidly lessens the tendency to suppuration. It is also very useful in cases of nodose acne, in promoting absorption of inflammatory products.

The treatment of acne with medicated soaps is popular with some dermatologists on account of its cleanliness and convenience, but in my hands it has rarely given the results I have obtained by other means.

For this purpose the best soaps are sulphur, camphor, and Balsam of Peru soap ; or a mercurial soap ; or a soap of ichthyol and sulphur. The best way in which to use them is to instruct the patient to lather the face well at night, allow the lather to dry on the skin, and wash it off with hot water in the morning.

A " soap ointment " containing $\overline{\text{Jii.}}-\overline{\text{Jiii.}}$ of soft soap in the ounce of soft paraffin, together with sulphur or mercury, may also be used, but in the treatment of acne, as of all other skin affections, it is better to rely upon a few chosen formulæ, the capacity of which one has tested, rather than dissipate one's energies and confuse one's results by chopping and changing prescriptions.

The Removal of the Comedo.—A strong lotion such as Duhring's does much to clear the skin of blackheads, but it is frequently necessary to remove them by mechanical means. For this purpose many comedo extractors have been devised. The simplest is the best, and the simplest is the tapering glass tube with thick edges (to lessen the risk of bruising the skin) which may be procured from any surgical instrument maker for a few pence. After a preliminary washing of the face with soap and water the narrow end of the comedo extractor should be applied over the blackhead, and steady pressure should be applied until it is seen to issue from the duct into the bore of the tube. Except over bone or the cartilages of the ear, the operation is painless, unless there be some inflammation round the comedo. After the little operation is over the part treated should be wiped with a piece of lint moistened with methylated spirits.

Treatment of Suppurative Acne.—Unless the suppurative process attains to the degree of abscess formation, it is advisable not to have recourse to surgical interference. Where it is considered necessary to incise an acne lesion, a tenotomy knife or other small bistoury should be used. Incisions leave scars, usually greater than those left by nature.

The suppurative process can usually be controlled and cured without surgical interference. Calcium sulphide in pill form, grs. ii. thrice daily after meals, often helps, but treatment by vaccines or colloidal manganese is much more effective.

In some cases vaccines act very well ; in others the improvement

they produce is negligible. One may use either stock vaccines, or autogenous vaccines. Stock vaccines of mixed staphylococci, to which acne bacilli have been added, are most generally used. They should be given hypodermically in doses increasing from 50 to 250 millions, at intervals of a week or ten days. If, after six injections, there is not a marked improvement, the vaccine should be stopped. At the moment detoxicated vaccines are in vogue. They may be administered in much larger doses than the ordinary vaccines, but in acne I have not seen any special advantages accruing from their use. In my practice the vaccine therapy of acne has now completely given place to injection of collosol manganese or of butyrate of manganese. If collosol manganese is used, it is important to employ the freshly prepared solution obtained by mixing equal parts of the No. 1 and No. 2 solution. The dose of the collosol and of the butyrate is 1-2 c.c. once a week.

In all varieties of acne vulgaris, but particularly in the suppurative variety, treatment with the ultra-violet rays gives good results. The dose should be an erythema of the first degree repeated once a week.

Treatment with X-rays.—The X-rays are useful in acne, not because they have any germicidal power, but because they aid in the re-absorption of the products of chronic inflammation, and cause a temporary atrophy of the sebaceous glands, so diminishing the seborrhœa. If properly administered, the X-rays are capable of producing a cure in the most obstinate cases. As the aim is to produce a gradual temporary atrophy of the sebaceous glands, it is better to proceed gradually, and administer successive fractional doses rather than a massive dose at a single sitting. A moderately soft tube should be used, with a spark gap of 3-4 inches, and $\frac{1}{4}$ - $\frac{1}{3}$ pastille dose should be administered once a week for four to six weeks. The eyebrows, eyes, and hair should be well shielded, and if the doses are carefully regulated and are not given too often, the danger of the after development of unsightly telangiectases is reduced to a minimum. X-rays, if properly administered, will convert a coarse, greasy, acne-disfigured skin into a smooth, elastic, and translucent one.

The best results in acne are obtained by a judicious combination of remedies, and with such a combination no case should be regarded as incurable.

GROUPED COMEDONES IN CHILDREN

As we have seen, the comedo is the initial lesion in acne vulgaris, but it may occur in groups apart from acne on the back or chest of young children. In all the cases I have seen there has been a history of the frequent application of camphorated oil or other liniment

to the affected part, and this I believe to be the usual cause of these grouped comedones (Fig. 125).

Treatment consists in stopping the application of the liniment, in removing as many of the blackheads as possible with an extractor, and in applying a lotion or ointment which will cause desquamation (see p. 380).

EXCORIATED ACNE—ACNÉ EXCORIÉE DES JEUNES FILLES, is not a

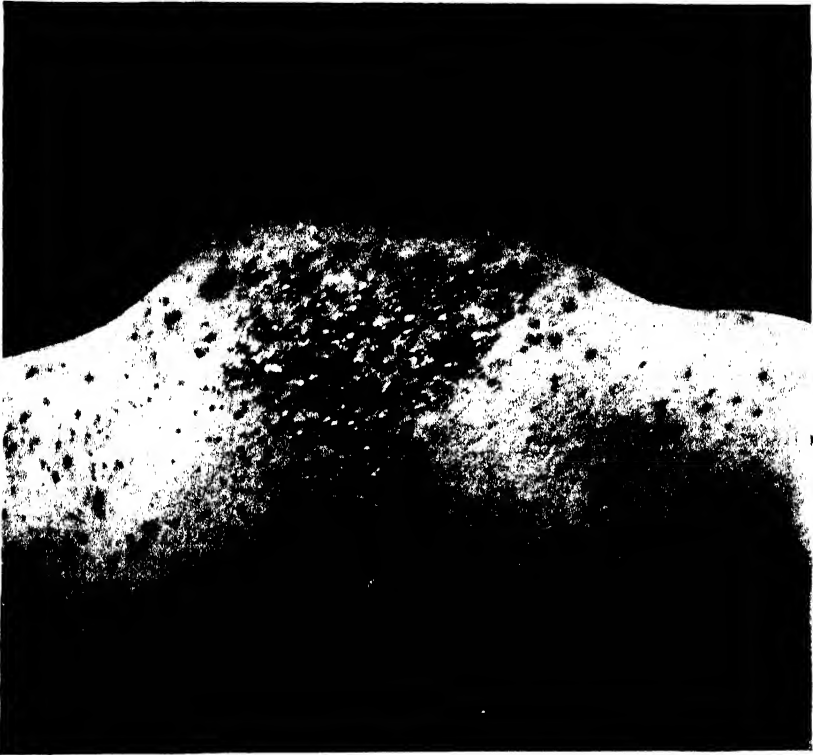


FIG. 125.—Grouped comedones.

true acne, but a pruriginous dermatosis characterised by the development on the face and neck of young and nervous women of a number of very itchy papules, which the patient constantly fingers. As a rule there is no excess of sebaceous secretion, or blackheads.

Treatment is by X-rays, glandular therapy, and the application of antipruritic lotions containing carbolic acid or mercury.

Acne Rosacea

Acne rosacea is dealt with here for convenience, but it must be understood that in most cases it is not associated with much disturbance

of the sebaceous glandular system, and if they occur at all, comedones are few in number.

Definition.—It is a moot point whether acne rosacea is a definite disease or merely a group of associated symptoms. It may be defined as an affection of the skin of the face characterised by persistent hyperæmia with which some involvement of the sebaceous glandular system is occasionally associated. This involvement may take the form of nodular thickenings, or actual suppuration in the sebaceous glands. Or we may have in place of, or coincidently with these nodes or pustules the development of scaly papules.

Etiology and Pathology.—There are two definite factors at work, viz. a circulatory factor and a local one. The circulatory factor is responsible for the reddish colour; the local factor generally for the superadded lesions.

The part of the face affected is that which is normally subject to flushing under the influence of emotion—the cheeks, nose, forehead, and chin. In people predisposed to this disease there is more or less intense flushing of these parts daily, depending upon some gastric or other reflex. The condition of flushing may become permanent, giving rise to a chronic hyperæmia. This hyperæmia leads to permanent dilatation of the capillaries immediately beneath the epidermis, with the formation of numerous new vessels, often tortuous and always dilated. The epidermis over these vessels becomes atrophied. The circulation being faulty, the skin suffers in nutrition (Plate XXXI). The activity of the sebaceous glands may be increased, and the resistance of the skin to micro-organismal invasion is diminished. Some patients, in consequence, develop the lesions of acne vulgaris; others develop crops of scaly papules.

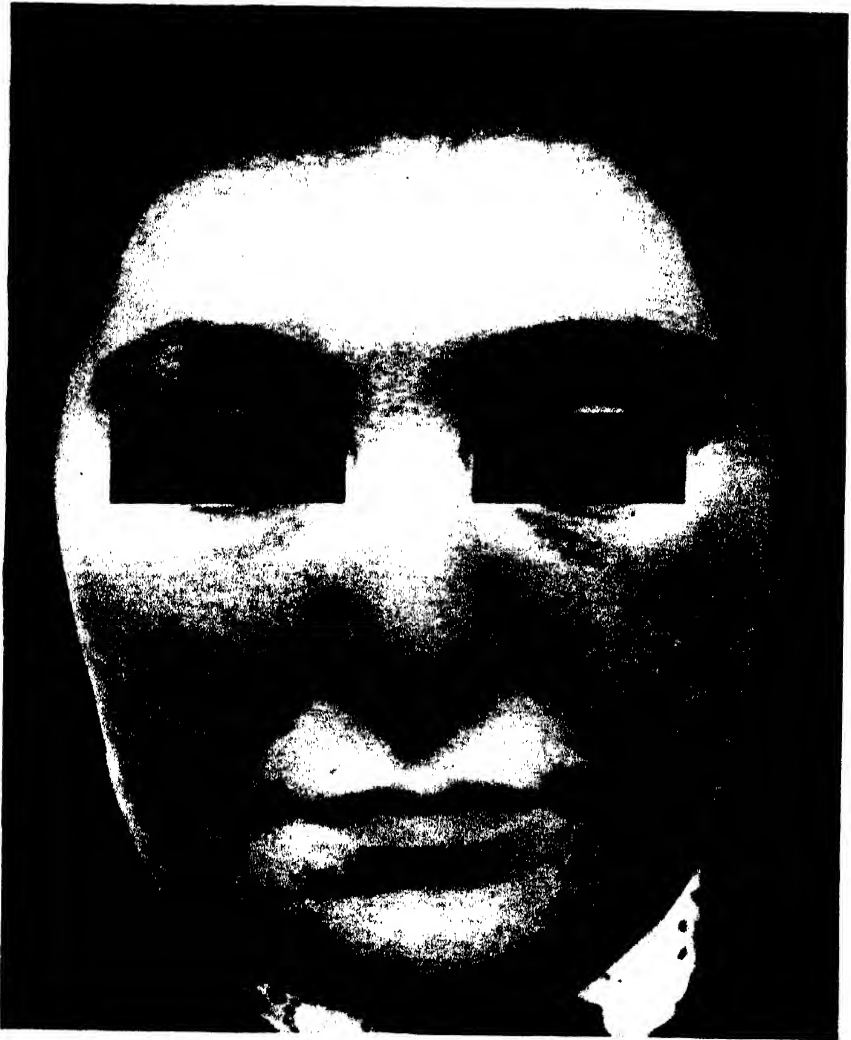
In many cases there is seborrhœa capitis, and some patients are subject to blepharitis and catarrhal conjunctivitis.

Acne rosacea is invariably associated with some form of alimentary disturbance. Ryle and Barber* have made careful gastric analyses in a series of twelve cases. In five there was complete achlorhydria throughout the period of the meal; in two there was extreme hypochlorhydria. Of the remaining five one showed no secretion of free hydrochloric acid till an hour after the meal, and two exhibited a temporary high peak in the acidity curve, with a sharp fall to the base line. They found a tendency to rapid emptying of the stomach, with the retention of a highly mucoid, viscid secretion like egg-white.

The hyperæmic element usually is exaggerated after meals. It is wrong to imagine that all sufferers from this distressing complaint are intemperate in alcohol. Many of them are total abstainers, but alcohol has an undoubted effect in producing that dilatation of the cutaneous

* *Lancet*, 1920, vol. 2, p. 1195.

PLATE XXXI



ACNE ROSACEA

Note the flushing of face with papules and pustules

blood-vessels which is an essential feature of the disease. The disease is frequently associated with constipation, pelvic trouble in women, and cold and clammy hands and feet. Cardiac disease, with chronic back-pressure, may supply the hyperæmic basis on which the lesions of the disease develop.

Treatment.—In this affection general treatment is of even more importance than in *acne vulgaris*. A careful investigation should be made of the whole length of the alimentary track, beginning with the teeth, and all abnormalities should be put right if possible. The circulatory and renal systems should also be examined with care, and, if need be, a gynæcologist should be consulted with regard to pelvic irregularities in women. The inside of the nose should also be examined for abnormalities. The diet should be regulated with care. No stodgy or indigestible food, or food that from experience the patient knows will disagree, should be allowed. Careful mastication should be enjoined, alcohol and excessive tea-drinking should be forbidden, and food should be eaten dry. A mixed diet is probably best.

Frequently there are evidences of gastro-intestinal fermentation. This should be dealt with. Charcoal powder, antiseptics such as sulpho-carbolate of soda in 2-5-grain doses, which may be given in *Mistura alba*, kerol, β -naphthol, or other antiseptics should be given to combat this. Ryle and Barber recommend dilute hydrochloric acid in doses of 30 minims, well diluted, with or after meals. I have had equally good results from alkalies, *e.g.* grs. v. of soda bicarb. twenty minutes before meals. Hyperthyroidism should be looked for and, if found, treated. Often a patient benefits greatly from glandular therapy, one of the polyglandular preparations being employed containing some of the posterior lobe of the pituitary gland.

Ichthyol internally in pill form sometimes gives good results, and Whitfield is a strong believer in the efficacy of camphor internally, especially in those cases in which the tendency to flushing is well marked.

X-ray treatment may help, but is not of such value as in *acne vulgaris*. For the rest, the treatment employed for *acne vulgaris* will be found very valuable. In acute cases with a hot skin, soothe with calamine lotion. In chronic cases "shelling" of the face with the lotion of zinc sulphate and potassa sulphurata (see p. 379) often produces gratifying results. When the papular, pustular, or acneiform lesions have been subdued, the dilated capillaries may be treated by electrolysis. This gives excellent results, but care must be taken to avoid producing scars in the tightly-drawn thin skin over the bridge of the nose. For electrolysis a fine "beading-needle" should be used, attached to the negative pole of the battery. The positive pole should

be applied to the arm or other remote part of the body. A current of $\frac{1}{2}$ –1 milliampère should be allowed to pass for a period of 10–20 seconds. The capillary to be treated should be “catheterised” by the fine point of the needle, and when the current is switched on bubbles of gas will be seen to pass along the lumen of the vessel. This “catheterisation” of the vessels gives much better results than are obtained by transfixing the capillary with the needle, and in careful and steady hands presents little difficulty. Not more than 15–20 capillaries should be dealt with at one time. After the treatment the patient should be instructed to apply calamine lotion daily.

Where the capillary anastomosis is very extensive, excellent results are often obtained by the use of linear scarification. General anæsthesia with nitrous oxide gas is necessary. The area to be treated is rapidly and thoroughly but superficially scarified in all directions with a multi-bladed scarifier. The capillaries are in this way cut into many small sections, and when healing takes place many of them are found to have been obliterated. If properly performed, the scars produced by linear scarification are invisible except on a close examination. Diffuse redness of the nose may be treated with CO₂ snow.

In all cases of acne rosacea treat any associated seborrhœa of the scalp thoroughly.

Rhinophyma

Owing to the long-continued engorgement of the skin of the nose in severe cases of acne rosacea, hypertrophic changes may occur, involving the sebaceous glandular system and associated with a fibrous tissue hyperplasia. Rhinophyma is most common in males. The tumour mass varies in size, and in rapidity of growth. The tip and lower third of the nose are usually involved, the overgrowth forming a congested-looking, lobulated mass, sometimes so large as to be pendulous, and always producing considerable disfigurement (Figs. 126, 127). There are no special subjective symptoms, but on pressure it is always possible to squeeze out long vermicular plugs of sebum from the sebaceous ducts.

The treatment is simple and effective. With a sharp razor preferably, or with a scalpel, under a general anæsthetic, the redundant tissue is shaved off in successive layers. There is little fear of removing too much tissue; the danger is that one holds one's hand too soon. Bleeding is profuse, but is easily controlled by pressure, and there is a rapid restitution of the epithelial covering, as every sebaceous gland acts as a little source of epithelial cells to restore the integument. During the process of healing it is often wise to administer, at intervals of a week, two half-pastille doses of the X-rays. This stimulates repair, and at the same time tends to lessen

the activity of the sebaceous glands. As a rule the cosmetic result is

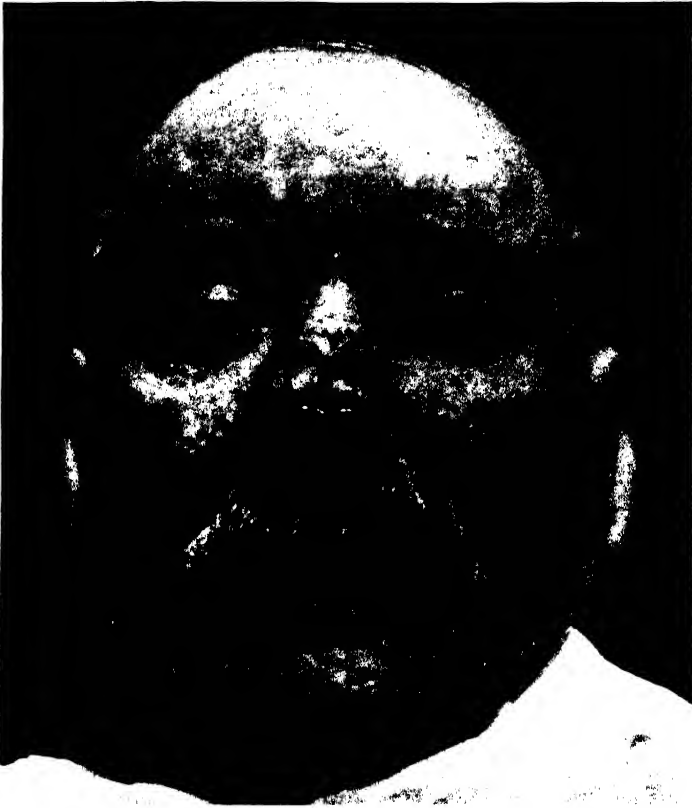


FIG. 126.—Rhinophyma. Case of moderate severity.

excellent, a patient whose condition has made him a distress to himself and an offence to his neighbours becoming once more a presentable member of society.

Acne Varioliformis

(Synonyms: *Acne necrotica* ;
acne atrophica)

Definition. — A chronic, indolent, inflammatory affection, usually limited to the skin of the scalp and forehead, characterised by reddish, or reddish-brown discrete small papules or nodules, often involving the follicles, and usually undergoing



FIG. 127.—Rhinophyma. Severe case.

central necrosis with pustulation. As the pustules dry up, dark-coloured, firmly adherent crusts are formed, and when the crusts separate a depressed white scar, such as follows variola, is left.

Etiology.—An associated seborrhœa is not infrequent, and Sabouraud believes the disease to be due to the *micro-bacillus of acne* with *staphylococci*.

Some authorities believe the condition to be a tuberculide.

Pathology.—The lesions are usually follicular and perifollicular. On section, localised foci of round-celled infiltration are found in the upper strata of the skin arranged round the follicles. Necrosis with sloughing of the epidermis occurs on the surface of the lesions.

Symptoms and Course.—The subjective symptoms are very slight. The inflammatory process being indolent, there is no pain, but some of the lesions would seem to itch, or it may simply be habit which causes the patient to pick them. The lesions are usually few in number, and the scalp is almost invariably affected. Both sexes may suffer but, in my experience, the males preponderate. It would seem to be a disease of adult life, though I have seen one case in a girl of six years. All the lesions are not at the same point in their evolution at one and the same time, so that one may see in the same case the reddish-brown papule or nodule, which is usually pierced by a hair; the nodule undergoing central necrosis; the crusted lesion; and the depressed white scar. Most of the lesions are discrete. Sometimes they are grouped, and patches of reddish-brown crusted lesions may be met with.

The disease may persist for years, fresh lesions continuing to develop as others subside.

Diagnosis.—The disease may be confused with *acne vulgaris*, *variola*, or a *pustular syphilide*. The distribution of the lesions, which are usually confined to the scalp, forehead, nose, and cheeks, and the small number of the lesions with their indolent history, the absence of systemic disturbances, and the result of a Wassermann test (provided the patient has not suffered from syphilis) should guide one to a correct diagnosis.

Treatment.—As the disease is microbic in origin, means should be taken to improve the patient's health. Arsenic and iron internally, quinine, nux vomica, may all be tried. Vaccine therapy, or preferably injections of colloidal manganese, should be employed.

Locally, lotions of bichloride of mercury may be employed, but in my experience, the best results have been obtained both on the scalp and on the glabrous skin by the following ointment :—

R. Ung. Hydrarg. Nitratis Diluti, ʒi.

Ung. Acidi Salicylici, ad ʒi.

Sig. Apply night and morning.

CHAPTER XXIII

DISEASES OF THE SWEAT GLANDS

THE STRUCTURE OF THE SWEAT GLAND

A SWEAT GLAND consists of a glomerulus and a duct. The glomerulus, which is the secreting part of the gland, lies in the subcutaneous connective tissue (Fig. 1). It is lined by a single layer of cubical epithelium, set on a basement membrane. The efferent duct is lined by a double layer of cells, and runs at first almost straight up to the epidermis, which it enters between the papillæ, and then passes on in corkscrew fashion to the horny layer on the surface of which it opens in a sweat pore. As it passes through the mucous layer of the epidermis the cells lining the duct begin to assume the characters of horn cells. Each gland has a nerve supply, and nerve fibres have been described penetrating between the epithelial cells that line the glomerulus.

Sweat glands occur all over the skin, and are particularly numerous on the palms and soles, from which the sebaceous glands are absent. They are very large in the axillæ. They are absent from the glans penis and the inner side of the prepuce.

The Constituents of Sweat.—Sweat consists of water, some fat, albuminous material and salts. Further, it contains cellular elements, nuclei and cell debris, and lymphoid cells. It is a clear colourless fluid, with a characteristic odour and a salt taste. As a rule its reaction is acid, but it may be neutral, and if secretion is excessive, it may be alkaline. Its S.G. is 1003–1006, and the amount secreted by a healthy adult, working normally, is between 800 and 1000 grammes in 24 hours.

The mechanism of perspiration is a valuable aid in the regulation of the body-temperature; the sweat glands are complementary in function to the kidneys, the sweat aids in the maintenance of the pliability of the skin, and there is reason to believe that it acts as a bactericide.

DISTURBANCE OF SECRETION OF THE SWEAT GLANDS

These disturbances depend on functional aberrations without alterations in glandular structure.

Excessive secretion is known as *hyperidrosis*; complete cessation of secretion as *anidrosis*.

Hyperidrosis may be general—in which case the whole sudoriferous glandular system oversecretes—or local, in which the sweat glands in a certain area of skin, e.g. over one cheek, or over the palms, may be abnormally active.

General Hyperidrosis depends on physiological activity, *e.g.* muscular exertion, or is due to exposure to a high external temperature. Or it may be due to a general infection, with rise of body temperature, or be produced by a general stimulant of glandular secretion, such as pilocarpin or by any other diaphoretic.

Excessive activity of the sweat glands gives rise to **sudamina**, which consist of tiny vesicles filled with a clear fluid, and set on a reddish base. Sometimes the contents of these vesicles become purulent. These sudamina may readily become the point of origin of an attack of eczema, or they may rupture, leaving a reddish punctate eruption, which consists of the macerated orifices of the sweat glands.

If the peripheral end of a sweat duct becomes occluded or destroyed, a retention cyst, known as **Hydrocystoma**, is formed. The cysts constitute rounded or oval lesions, varying in size from a pinhead to a lentil, tightly filled, but elastic, translucent, bladder-like. They are most common in women (*e.g.* cooks and washerwomen, who are exposed to heat), and their site of election is the face. On puncture, an acid, watery fluid escapes, and the lesions disappear. They may be destroyed by puncture, or by the electro-cautery.

Local Hyperidrosis This may occur in any region of the body without visible changes in the skin, or discoverable lesions in the nerve supply of the affected region. Hands, feet, anal region, axillæ, may all be affected in this way.

Hyperidrosis of the hands is usually palmar, and affects also the palmar surface of the fingers. It is a distressing condition for the patient, and interferes with his usefulness, for his moist hands soil everything he touches. Any nervous disturbance or emotional upset tends to make the secretion more excessive. Sometimes, through blocking of their orifices, a condition of **Dysidrosis** occurs on the palms and fingers. Rounded or oval bladder-like vesicles are formed, lying in the epidermis, and covered by the thick horny layer, which is tensely stretched. The condition is associated with some itching, burning, and feeling of tenseness in the parts. Adjacent vesicles may become confluent, and the whole hand may become swollen. With the coalescence of adjacent vesicles, large areas of the stratum corneum may be undermined, and the pressure beneath it may cause its rupture in places, and the cutis is exposed.

Secondary infection with pus organisms may occur. The condition is known as *Cheiro-pompholyx* (Fig. 128).

Hyperidrosis of the feet usually affects the soles. The feet are cold, and bathed constantly in perspiration, which not only macerates and destroys the socks and stockings, but also macerates the skin between the toes.

The anal region, especially the skin between the nates, may sweat excessively, and the accumulated secretion may produce maceration that may lead to eczema.

Excessive sweating in the axillæ is not uncommon, and is more frequent among women than men. Sometimes, if a patient is stripped, it is possible to see beads of sweat actually exuding from the dilated sudoriferous orifices and trickling down the sides of the thorax. This is due to the action of the cold air in causing the unstriated muscle fibres associated with the large sweat glands in the axillæ to contract, with the result that sweat is squeezed out (*Hyperidrosis nudorum*).

Excessive sweating of the face may be local, affecting the nose (where it may

produce a condition known as *Granulosis rubra nasi*), the upper lip, or the chin ; or it may involve the whole face or one half of it. I have had under my care a patient in whom there was marked hyperidrosis over a lozenge-shaped area which extended from close to the hair margin over the forehead to the end of the nose.

Sweating of the upper lip, and sweating of the scalp, which is very common in bald-headed men, is frequently provoked by some buccal or gastric reflex, e.g. from hot and spicy food in the mouth or stomach.

Bromidrosis—the condition in which the sweat develops an extremely disagreeable odour—is due to organismal infection. It is usually the sweat of the feet that becomes contaminated in this way, but the perspiration of the axillæ or of the anal region may also become involved.

Chromidrosis.—Sometimes the sweat is coloured. It may be black, red, green, or blue. Such alterations are due to the presence of chromogenic or colour-producing micro-organisms, and are of little practical importance.

Uridrosis is the name applied to the presence of urinary constituents in abnormal quantity in the perspiration. The condition is met with in association with diseases of the kidneys, eclampsia and Asiatic cholera, and tiny microscopical crystals of urinary salts may be found on the skin.

Treatment.—The treatment of excessive secretion of sweat is a matter of some difficulty. Astringent powders, etc., may be employed.

Sulphate of quinine, 1 part in 5 parts of powdered starch, has been highly recommended, and 2-4 per cent. salicylic acid powder with talc is also good.

Daily washing with a lotion of equal parts of spirit and water, or immersion for 5-10 minutes daily in a 5 per cent. solution of formalin may help.

In severe cases fractional doses of the X-rays may be given, but this treatment should not be carried to such a degree that the secretory functions of the sweat glands are completely destroyed.

If the excessive perspiration on hands or feet has given rise to secondary lesions of the skin, such as rhagades, maceration, etc., these secondary conditions must be treated "secundum artem."

No internal medication for hyperidrosis is of much avail. Atropine has been given, and it certainly lessens sweating ; but by its interference with the activity of other glands it produces symptoms as unpleasant as those for which it is being employed.

For Bromidrosis scrupulous cleanliness is necessary. If, as is usually the case, it affects the feet, they should be soaked daily in weak formalin



FIG. 128.—Dysidrosis. Cheiro-pompholyx.

solution, or washed in water to which some Eusol has been added. They should then be thoroughly powdered with a powder as follows :—

R. Camphor, grs. xx.
 Spirit vini meth., qs.
 Acid. Salicyl., grs. xxx.
 Pulv. Talci, ʒi.
 M.

and a fresh pair of cotton socks should be worn daily. Cotton socks are recommended because they can be boiled. As a matter of practical interest it may be stated that it is unwise for any person with a tendency to excessive perspiration of the feet to wear shoes with rubber soles, or rubber mid-layers.

DIMINUTION OF SWEAT SECRETION

Anidrosis.—Certain skin diseases, *e.g.* Ichthyosis, Prurigo, Xeroderma pigmentosum, are associated with diminished secretion of sweat, and there is a lessening or complete suspension of sweat secretion from those parts of the skin affected by Psoriasis.

General diseases such as diabetes may be associated with a lessened secretion of sweat ; and in certain forms of paralysis there is a diminished secretion from the skin of the part affected.

Partial anidrosis may occur without recognisable cause, one part of the skin remaining dry, while the rest secretes normally.

The secretion of sweat may be suspended indefinitely. The treatment of anidrosis is somewhat hopeless, but diaphoretics may be administered, or thyroid substance.

Locally, emollient ointments will tend to keep the skin elastic.

CHAPTER XXIV

ANOMALIES OF PIGMENTATION

AN increase or diminution of the normal pigmentation of the skin may occur as a sequel to almost any cutaneous affection. For instance, after an attack of eczema, exfoliative dermatitis, lichen planus, and many other diseases the sites of the eruption may exhibit transient or permanent alterations in pigmentation.

Alterations in the pigmentation of the skin are symptoms of such systemic affections as Addison's Disease, Bronze Diabetes (hæmosiderosis), and chronic malaria, etc. They occur also in chronic arsenical poisoning and argyria.

Temporary and, occasionally, permanent alterations in pigmentation accompany pregnancy (*Chloasma uterinum*). They probably depend on some abnormal activity of the endocrinous glands.

These are examples of what one may call accidental anomalies of pigmentation. There are, however, diseases of the skin in which alterations in pigmentation are the chief or only clinical symptoms.

EPHELIDES ; FRECKLES

Definition — Ephelides or freckles are small, reddish-brown or rust-coloured angular-shaped multiple deposits of pigment usually confined to the face, hands, and arms.

They are due to the actinic rays of the sun acting on the skin of susceptible people. Probably they are brought about by some damage to the endothelium of the superficial vessels induced by the sun's rays, causing the deposit of blood pigment as a protection against further damage.

There are no subjective symptoms. Freckles affect, chiefly, individuals with reddish hair. They are never present at birth, but usually begin to appear between the ages of six and ten years, in summer, on parts of the body exposed to the sun's rays. They tend to fade away during the winter months, so that they may hardly be recognisable, waking up again into full visibility with the return of summer.

After puberty they tend to disappear completely, though in some individuals they persist through life.

Unless they are so numerous as to render the sufferer conspicuous, no treatment is required.

The best remedy is a 1 per cent. solution in alcohol of perchloride of mercury, painted on with great care several times daily. It causes desquama-

tion, and produces some diminution in the pigmentation. A paste containing 10 grs. of sulphate of quinine in the ounce, applied to the face before exposure to the sun, may prevent freckles.

Vitiligo or Leucodermia

Definition.—Leucodermia is a disease of the skin characterised by the appearance of one or more whitish patches from which the normal pigment has been removed to be deposited in the adjacent skin, which is thereby rendered darker in colour than the normal.

Etiology.—The determining cause is unknown, but the disease probably depends upon a tropho-neurosis. Predisposing causes may be any systemic infection such as scarlatina, typhoid fever, influenza, etc., but their relationship to the pigmentary changes is undetermined.

Pathology.—On section no pathological changes are discoverable except that the skin affected is absolutely devoid of pigment, while the skin around shows a great increase in the amount of pigment present in the corium.

Description.—The disease affects both sexes with equal frequency. It rarely begins before the tenth year of life, and rarely after the thirtieth. The lesions are often symmetrical, and may appear on any part of the body except the palms and soles. In practically every case of leucodermia, however few be the lesions on the general integument, there is some depigmentation of the skin of the external genitals, and the internatal cleft.

Subjective symptoms are absent though, occasionally, slight pruritus may precede or attend the development of the lesions. The affected skin preserves its normal sensitiveness, and the sweat and sebaceous glands in the depigmented areas continue to perform their functions. Hair rooted in the affected skin loses its pigment and becomes white.

In some cases of leucodermia the patient develops patches of white hair upon the head, an indication that the skin of the scalp has become affected.

On the body or limbs, the lesions are very characteristic. They begin as small rounded whitish maculæ, which increase in size, losing some of their regularity of outline as they do so. Adjacent patches coalesce so that lesions of irregular shape are formed. Extensive spread, and the coalescence of large lesions may lead to the appearance of huge depigmented areas, covering large tracts of skin. Every depigmented patch is surrounded by an area of the skin in which there is an obvious increase of pigmentation (Plate XXXII). The larger the leucodermatous patch, the more intense the pigmentation of the skin adjacent to it. It is as though a wave of disturbance had traversed the affected areas, sweeping up the pigment and depositing it in the



LEUCODERMIA

Note the depigmentation (Leucoderma) and the associated hyperpigmentation (Melanoderma)

adjacent skin, just as the waves of the sea in a storm will tear off the seaweed from the rocks in the sea-bed, and deposit it in heaps along the shore. Where depigmentation is very extensive, the pigmented areas may be represented by small very dark-coloured islands of skin, and where the loss of colour is almost universal save for these pigmentary deposits, it is the pigmented, rather than the depigmented skin, that impresses one, and one may then speak of *melanodermia*.

The disease tends to spread slowly and peripherally. Often it becomes arrested, and some cases of spontaneous improvement occur.

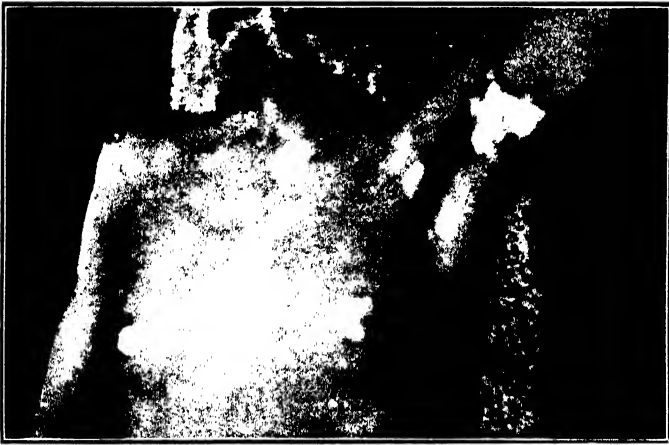


FIG. 129.—Leucodermia.

Note the removal of pigment from the areolæ.

It does not produce any disturbance of the general health, though in sensitive women considerable mental distress may be provoked by the presence of the lesions upon visible parts.

Treatment is unsatisfactory. The prolonged administration of arsenic in the form of Fowler's or Donovan's solution may be tried, and some of the glandular extracts may be administered. There is no satisfactory means of staining the depigmented skin, though many reagents have been tried. Exposure of the whitened areas to the sun's rays or to ultra-violet rays in the hope of producing the "tanning" of sun-burn is of no avail. It only increases the over-pigmentation of the borders, without influencing the colour of the whitened patch. The pigmented borders of the affected patches may, however, be rendered somewhat less conspicuous by the application of a 1 per cent. solution of Hydrarg. Perchlor. in spirit, or by the use of a paste containing 2-4 grs. of Hydrarg. Perchlor. in the ounce.

DIFFERENTIAL DIAGNOSIS

Leucoderma requires to be distinguished from (a) *partial albinism*, (b) *pityriasis versicolor*, (c) *morphæa*, (d) *leprosy*, (e) "the pearl necklace" depigmentation sometimes met with in *syphilis*, (f) whitish scars left after *herpes zoster*.

Partial albinism is a congenital absence of pigmentation from some area of the skin. Leucoderma is not congenital. In partial albinism there is no characteristic bordering of the depigmented patch by deeply pigmented skin. Further, symmetrical distribution of lesions is characteristic of leucoderma, and absent in partial albinism.

Pityriasis versicolor may, if extensive, suggest leucoderma, the part of the skin affected by the fungus suggesting the hyper-pigmented zones, and the normal skin, by contrast, suggesting depigmented skin. The doubt may be cleared up by a moment's investigation. A skin curette, or blunt scapel passed over the skin affected with pityriasis versicolor will gather up many fine scales, while if passed over the pigmented skin surrounding a leucodermatous patch the instrument will not gather up any scales. A microscopical examination of the scales, washed in ether and moistened with Liquor Potassæ, will reveal the fungus.

Morphæa.—In morphæa the whitish or ivory-like plaque is surrounded by a lilac-coloured zone, which becomes brown only at a later date. In morphæa, too, there is a characteristic gristly hardness of the affected skin, while in leucoderma the texture of the skin is normal.

Lepra.—In lepra any whitish areas of skin show, on close examination, a cicatricial atrophy, and there is, in the macular type, almost certain to be some diminution in the sensitiveness of the skin, which is not met with in leucoderma.

Syphilis.—Sometimes, in women, there follows the retrogression of the secondary lesion the development of a series of leucodermatous patches arranged round the lower part of the neck, usually most marked at the sides, and suggesting a necklace. There is no cicatricial atrophy in these patches. They resemble the lesions of true leucoderma very closely, but the characteristic zone of increased pigmentation around them is absent.

Herpes.—Sometimes, after herpes zoster, one may meet with a series of whitish patches where the herpetic lesions had been (Fig. 91). The differential diagnosis is reached by (a) the history, (b) the distribution along the line of a nerve, (c) the fact that on close examination definite atrophy of the skin is discernable, and (d) the absence of over-pigmentation around the lesions.

In making a differential diagnosis, this point is of great importance: never forget that leucoderma consists of an association of *depigmentation* with adjacent *over-pigmentation* of the skin.

OTHER PIGMENTARY ANOMALIES

A brown or brown-purple pigmentation of the legs results from *dermatitis hæmostatica*, and Schamberg has described a progressive "cayenne pepper" pigmentation of unknown cause.

Arsenical pigmentation and **Argyria** have been dealt with under Drug Eruptions.

TATTOOING

Tattooing, a variety of self-pigmentation, common among savage races, and affected by some otherwise civilised people, requires a word of description.

The process consists in picking out, with a fine needle, a design upon the skin, and introducing, with this needle, various pigments, of which the commonest in use are charcoal, indigo, and carmine. Frequently the tattooer moistens his needle with his saliva, and I have known more than one person acquire syphilis from this filthy procedure. *— J. A. W. S.*

Sooner or later, most persons who have allowed themselves to be tattooed, wish to get rid of the disfigurement. The removal of the design is not an easy matter, unless it can be excised. The following procedure has been recommended in cases where excision is impossible :—

- (1) Tattoo the whole design with a strong solution of tannin.
- (2) Then rub the whole briskly with a silver nitrate pencil. Some of the caustic penetrates into the tattoo-punctures.
- (3) Wipe off any superficial remains of the caustic.
- (4) Apply a drying powder of tannin several times daily. A crust forms over the tattoo-punctures, and when it separates much of the pigment is found to have come with it. Repeat the process if necessary ; but never deal with an area larger than a florin at a time.

Accidental “tattooing” is met with on the hands and face, back and chest of coal-heavers, or in consequence of explosions in which particles of gun-powder or dust have been blown into the skin, or by accidents in cycle or motor races on cinder-tracks. One can usually recognise a collier by the stippling of his skin with bluish points of pigment. Little can be done for these conditions, unless excision is possible.

CHAPTER XXV

HYPERTROPHIES AND TUMOURS

HYPERTROPHIES OF, AND NEOPLASMS ARISING FROM, THE EPIDERMIS

I. Benign

CALLOSITIES

A CALLOSITY is a circumscribed hypertrophy of the stratum corneum, without involvement of the deeper layer of the skin, or downgrowth of horny cells, as in a corn. It is the direct result of constantly repeated or prolonged pressure or friction, and is a protective device to guard the deeper structures of the skin from injury.

There are no subjective symptoms, but, as will readily be understood, tactile sensitiveness is diminished where the skin is thus thickened. Callosities develop at points of friction, *e.g.* on the soles of the feet, if the shoes are unsuitable; at the bases of the fingers of boatmen; on the sides of the thumb in shoemakers; on the tips of the first, second, and third fingers of the left hand in violinists; on amputation stumps if the artificial limb is ill adjusted, and so on.

They are convex thickenings of the skin, usually of rounded contour, diminishing in thickness at their periphery and gradually melting away into the adjacent normal skin. They are somewhat tallow-coloured.

Sometimes inflammatory changes may occur beneath them, with abscess formation. This usually leads to spontaneous cure.

Treatment consists in the removal of the cause, when the callosities will disappear. Their disappearance may be assisted by ablation, or by digestion by means of salicylic acid plasters.

CORNS (CLAVUS)

Definition.—A corn is a localised hypertrophy of the horny layer, but it differs from a callosity in that there is a spike-like downgrowth of horn cells through the stratum mucosum towards the dermis.

Etiology.—The cause is pressure. The pressure produces in the first instance a temporary local anæmia, which is followed by a hyperæmia, with subsequent proliferation of epithelium.

Histo-pathology.—On section one observes a circumscribed hypertrophy of the horny layer. From the centre of the hypertrophied area there is a definite downgrowth of horn cells, leading to an atrophy of the deeper layers of the epidermis. The prickle cell layer is reduced in thickness. The central spike of the corn often exhibits little hæmorrhages, and the cells of which it is composed are sometimes nucleated. In the true skin

there is some dilatation of superficial capillaries. Under the corium a large lymph space or bursa frequently develops. Inflammation and suppuration may occur in this, giving rise to serious complications, *e.g.* the opening of the subjacent articulation.

Symptoms.—Corns are very sensitive to pressure. Sometimes they ache spontaneously, especially in damp weather, and if inflamed they give rise to acute pain.

Their sites of election are the dorsum of the toes, over the joints, the outer side of the little toe, and the soles of the feet, especially over the metatarso-phalangeal joints. Not infrequently one meets with what is known as a "soft corn," between the toes. It is soft, because its surface is macerated by secretion. These interdigital corns present a characteristic appearance, compared by the French to the eye of a partridge.

In superficial appearance a corn may closely resemble an ordinary callosity, but if one examine it closely, preferably after removing a thin layer from its surface with a scalpel, one can recognise the base of the central "spike" by its whiter appearance and its greater opacity. Multiple corns upon the soles may be so painful as to render walking almost impossible.

Diagnosis.—The diagnosis is an easy one, and is usually made by the patient himself. But confusion may arise with "syphilitic corns." These occur also on the palms and soles, but they do not, as a rule, appear on the sites of election of ordinary corns; they are of darker colour; and show earlier symptoms of inflammation. They are not, as a rule, so painful as true corns.

Treatment.—This consists primarily in the removal of the cause. Well-fitting shoes should be worn, with woollen stockings. In many cases this will bring about spontaneous cure. If the toes are deformed and press upon each other unduly, they may be separated by rubber "toe-posts."

Active treatment of a surgical nature may be called for. Under local anæsthesia the central part of the corn should be dug out with a small sharp curette, and the surrounding thickened horny layer should be clipped away with scissors, or thoroughly pared off with a scalpel. This treatment gives immediate relief, and if the cause is eliminated the corn will not return.

Palliative treatment consists in the ablation of successive layers of the thickened skin. This eases the pain by diminishing the pressure on the central spike.

Treatment with salicylic plaster (10-40 per cent. with *Cannabis Indica*), which digests the horny layer and facilitates its removal, may also be employed; or one may use a salicylic acid collodion as follows:—

R. Acidi Salicyli., ʒi.
Ext. Cannabis Ind., grs. x.
Collodion flex., ʒvi.
Ether Sulphurici, ʒiii.
M.

Sig. The paint: to be applied night and morning.

After a few days the corn is softened and can be removed. But unless the cause, *viz.* pressure, is permanently removed the corn will return.

Molluscum contagiosum, *verruca vulgaris*, *verruca plana*, *verruca senilis*, and *condyloma acuminatum*, which belong histologically to this group, have already been dealt with (Chap. VIII.).

“PAINFUL NODULE” OF THE EXTERNAL EAR: CHONDRODERMATITIS
NODULARIS CHRONICA HELICIS (WINKLER)

This is a not uncommon condition, and consists in the development of a small, firm, circular nodule, either sunk in the skin or elevated slightly above it. It occurs on or near the free border of the helix, on the upper part of the auricle. The nodule is painful on pressure, and may first be discovered through the patient's inability to sleep when that ear is pressed against the pillow. The pain is an ache, such as that produced by pressure on a “corn.” I have never seen these nodules on a woman's ear. They are not uncommon in men over fifty. The cause is unknown. It may be due to injury of the cartilage of the auricle, to which the nodule is always firmly attached.

Treatment consists in excising the nodule with a piece of the underlying cartilage. Radium and X-ray treatment have also been recommended.

MILIUM OR GRUTUM ; MILIARIA

True milium is an opaque, whitish, rounded body, sometimes hard, sometimes soft, discrete or sometimes aggregated, found usually upon the



FIG. 130.—Cylindroma on scalp.

Breaking down ; (?) commencing malignant changes.

face on the cheeks and near the eyes. It is a species of tiny cyst containing horny material. Another form of milium, formed by the occlusion of the sebaceous follicle so that a small retention cyst is formed, contains sebum and epidermic cellular debris. Treatment is to puncture the epidermis over the milia, and express them. Once removed they do not tend to recur.

BENIGN CYSTIC EPITHELIOMA

Into this group fall a number of neoplasms that have been described under many names. They are small, shiny, non-malignant, round or oval

lesions, met with usually on the face, neck, and trunk. They are believed to be derived from "cell-rests," *i.e.* little clusters of embryonic cells that have stopped short of specialisation into sweat-glands or pilo-sebaceous follicles.

To this group belong *Cylindroma* (Fig. 130) and *Epithelioma adenoides cysticum* of Brooke. These neoplasms may become locally malignant.

EPITHELIOMA ADENOIDES CYSTICUM

This disease, first described by Brooke, and of later years carefully studied by Louis Savatard, affects females chiefly, and sometimes runs in



[Lent by Dr. Savatard.]

FIG. 131.— *Epithelioma adenoides cysticum*.

Compare distribution of lesions with those in Fig. 132, *Adenoma sebaceum*.

families. The tendency to it is congenital, though the lesions may not appear till puberty. It is characterised by the development on the forehead, between the eyes, on the middle third of the face, the sides of the nose and the adjacent parts of the cheeks, as well as on the upper lip and chin, of a number of symmetrically distributed, shiny, firm tumours, which move with the skin, and which are definitely associated with the hair follicles (Fig. 131). In size the lesions vary from a millet-seed to a hazel nut. They are sessile,

and usually of the colour of normal skin, though they may be darker. They may occasionally ulcerate, and sometimes become malignant.

Treatment is by surgical removal or curetting if the lesions are few, and by X-rays if they are numerous.

Sebaceous cyst ; Adenoma of the Sebaceous Glands

(Synonyms : "*Wen*," *Atheroma*)

Sebaceous cysts occur chiefly on the scalp, scrotum, and back, as rounded, tense, soft-solid, painless tumours, varying in size from a pea to a goose's egg. The modern idea is that they are developed from embryonic rests which form sebaceous material. The old idea was that they were retention cysts formed by occlusion of the sebaceous ducts. Some of them, there is little doubt, are formed in this way. They have a capsule of varying thickness, which may, through inflammation, become firmly adherent to the stretched and thin skin over them. Usually it is possible to express their contents through an orifice in the skin. Sometimes they suppurate.

Treatment is by complete excision. If any fragment of the capsule is left the cyst will form again.

Adenoma sebaceum

Adenoma sebaceum is a congenital form of tumour involving chiefly the sebaceous glands, though in many cases there is an admixture of nævoid tissue. Though congenital the tumours are not visible at birth, but develop in late childhood. The tumours, which vary in size from a pin's-head to a pea, are found on the face, especially in the naso-labial sulcus, the sides of the nose where it merges with the cheeks, over the malar prominences, and on the forehead at the root of the nose (Fig. 132).

Three main types are described—

(1) The *Pringle type*, red in colour because of the admixture of nævoid tissue. In this type there is a great hyperplasia of the sebaceous glands.

(2) The *Balzer type*, pale in colour. The changes are chiefly in the hair follicles.

(3) The *Hallopeau-Leredde type*, usually brownish-yellow in colour and sometimes verrucose. Histologically there is a preponderance of the fibroma element.

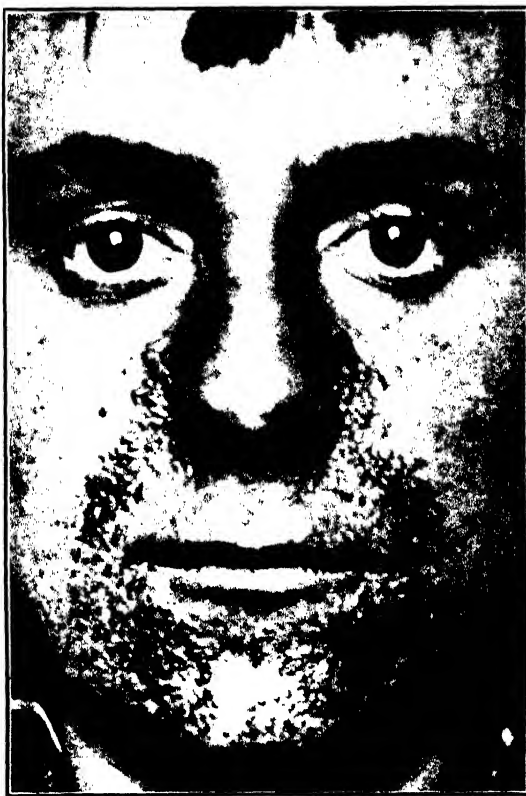
Mixed types may be met with.

The disease is not uncommon among mentally defective children and epileptics, but is rare in normal children. It is often associated with tuberose sclerosis in the brain, and as it is essentially an embryonic condition, embryonal tumours have been found in the heart, liver,

intestines, kidneys, etc. These visceral tumours may be the points of origin of malignant disease.

On the skin the condition is often associated with molar growths, soft fibromata, and areas of pigmentation.

The tumours produce no subjective symptoms, but are often



[Lent by Dr. Savatard.]

FIG. 132.—Adenoma sebaceum.

disfiguring. If, for that reason, treatment is required, they may be destroyed by electrolysis, by the galvano-cautery, or with carbon dioxide snow

Cornu cutaneum ; Cutaneous horn

This rare condition is of importance because it is sometimes the starting-point of a malignant degeneration of the skin in the aged. Cutaneous horns are essentially tumours of the epidermis. Unlike the horns of ruminants, they are not attached to the skeleton and have no osseous base or core.

Etiology.—Age is an important factor in their production. They are rarely met with until the fiftieth year is passed. In my experience they are commoner in women than in men in the proportion of 3 to 2. Usually a cutaneous horn is preceded by some other lesion of the skin, *e.g.* a scar, a senile keratoma, or a sebaceous cyst, from the internal wall of which it may spring.

Histo-pathology.—The mass of the horn consists of a large collection of firmly welded lamellæ of horn cells, some of which contain nuclei, many of which are incompletely keratinised, and some of which are vacuolated. In some cases greatly lengthened papillæ project into the masses of horn cells. The papillary layer may show inflammatory changes, *e.g.* dilatations of blood-vessels and perivascular small-celled infiltrations. Very often the microscopical appearance of the tissues at the base of a cutaneous horn closely resembles the appearances found in an epithelioma, but in a horn the epithelial columns are more definitely limited.

Description.—Cutaneous horns are met with chiefly upon the head, though the genitals in men may be affected. The eyelids are a not infrequent site of cutaneous horns (Plate XXXIII). As a rule the horn is single, though two or more may occur in the same person. The growth is hard. It may be a short, stumpy, irregularly pyramidal or cylindrical formation, of a dirty yellowish-brown or greyish-brown colour, or it may be long, conical, and pointed. Sometimes the free end is split into several branches. The surface is uneven, furrowed sometimes transversely, sometimes longitudinally. The base of the horn is surrounded by a dermic collar, which sheathes it for a short distance as the cup of an acorn sheathes the acorn. As a rule there is no sign of inflammation at the base, but occasionally, on moving the horn, a little pus may be seen to escape. There are no subjective symptoms, unless the horn is on a part of the body, *e.g.* the neck, where it is interfered with by the clothing. The horn is freely movable, and it may be bent on its insertion in all directions, as it is not attached to the deeper structures.

Some cases undergo spontaneous cure. In about 10 per cent. of cases, malignant changes occur. The horn falls; the base proliferates rapidly, becoming epitheliomatous.

Diagnosis.—This is a matter of no difficulty, but one should be careful not to confuse with *rupia*.

Treatment.—If treatment is not thorough, the horn will recur. One should never forget the tendency to malignant degeneration, and treatment should be based on that knowledge. The best treatment is excision with an incision which passes round the base at a distance of at least a quarter of an inch, and which cuts through the whole thickness of the skin. Or the horn may be scooped out with a curette, and the

PLATE XXXIII



CORNU CUTANEUM

(Lent by Mr. Bernard Chavasse)

base treated with Liquor Hydrarg. Nit. Acid., or other strong and effective caustic, or with radium or X-rays.

Nævus pigmentosus ; pigmented nævus, pigmented mole

The pigmented nævus or mole is a congenital abnormality, and consists of a sessile or raised warty brown or blackish mass of varying size. Frequently these nævi or moles are covered with hair



FIG. 133.—Nævus pigmentosus.

(*nævus pilosus*), and if extensive, and situated upon the face, may produce a leonine or canine appearance.

Sometimes a large portion of the trunk may be involved by one of these pigmented moles (Fig. 133).

They are of importance because of their unsightliness, and their tendency to undergo malignant degeneration. They really take origin in the epithelial cells of the epidermis, which lose their epithelial character and become converted into connective tissue cells. They

grow in extent usually *pari passu* with the growth of the body, and when they undergo malignant degeneration they become epitheliomata, and not, as was so long believed, sarcomata. The amount of melanin they contain is no criterion of their potential malignancy.

Treatment.—Unless excision is possible, these moles are best left alone. Small ones may, however, be destroyed with CO₂ snow or radium. Above all, caustics should be avoided, lest they irritate, and precipitate malignant changes.

2. Malignant tumours arising from the epidermis

EPITHELIOMA

All tumours arising from the epithelial layers of the skin are strictly speaking epitheliomata, but custom reserves the name for those neoplasms which are essentially malignant. The commonest variety of malignant degeneration of the skin is the *Rodent ulcer*, or basal-cell carcinoma.

Rodent Ulcer

Definition.—A slow-growing epithelial tumour of the skin, with a raised “pearly” edge, and a depressed centre which sooner or later undergoes ulceration, and, if untreated, may involve the deeper structures and bring about death. It does not, except in rare cases, produce secondary involvement of the glands.

Etiology.—The precise cause is unknown, but chronic irritation and injury are undoubtedly predisposing causes. It is worthy of note that rodent ulcers almost never occur outside the area of distribution of the fifth cranial nerve.

Histo-pathology.—There is a marked proliferation of the deeper layers of the epithelium, which projects in columns of round, oval, or polygonal cells with large nuclei into the deeper tissues *without the formation of cell nests*. These downgrowths of epithelium are limited by an unbroken layer of columnar cells, and a fibrous tissue stroma usually surrounds the whole epithelial mass.

Description.—Rodent ulcers affect both sexes, but are probably more common in men. They occur, usually, after the age of thirty-five, though I have met with them as early as the 25th year in a woman, and the 28th year in a man. They are most often met with between the ages of forty-five and fifty. They begin insidiously, and progress at first slowly. They may take origin in a wart. They begin as a little hard nodule, rising from apparently normal skin without accompanying inflammation. They are, at first, quite superficial, and not attached to the deeper structures. There is no pain in the early stages,

though observant patients will sometimes describe a sensation of "formication" associated with them. The site of election is the nose



FIG. 134.—Squamous-cell carcinoma (Epithelioma).

and the parts of the skin adjacent to it. The appearance is characteristic (Figs. 135, 136). (1) There is a hard prominent edge with a characteristic "pearly" glance, due to the stretching of the horny layer over the proliferating epithelium. (2) The centre is depressed

and sometimes overrun by small blood-vessels, which may be seen passing over the pearly edge. At first the epithelium over the centre is intact, but sooner or later it breaks down, and superficial ulceration occurs. This ulceration, at first, tends to heal spontaneously, and a patient will often give an account of successive occurrences of ulceration, followed by repeated temporary healing. After a time spontaneous healing ceases to occur, and the centre of the "ulcer" is roofed by a small crust, which, if removed, is seen to cover a moist, inflamed, granulating base. As time progresses the periphery, which is the active malignant zone, slowly spreads, involving more and more of the sound skin, and involving also the deeper structures, even the bone. The general contour of the growth is round, though other



FIG. 135.—Rodent ulcer.

Note the raised edge and depressed centre.



FIG. 136.—Rodent ulcer.

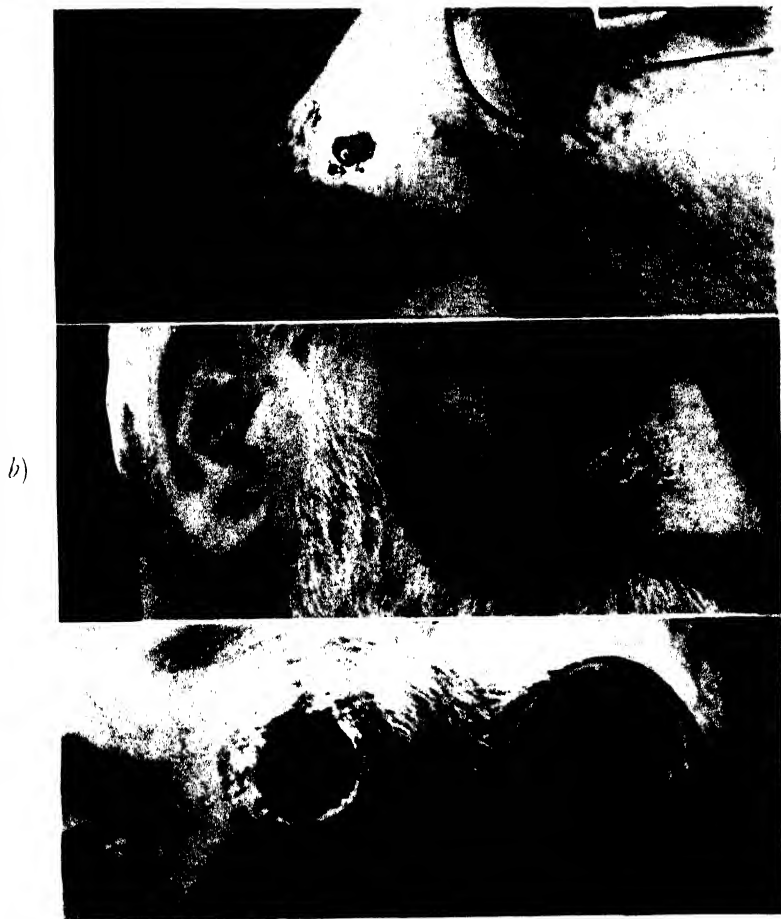
The centre has broken down.

varieties of shape may be met with. As the disease progresses the circular contour may be lost, though the advancing edge almost always retains its convexity outwards (Plate XXXIV).

In the majority of cases the spread is very slow. An ulcer may last for ten years without attaining the size of a shilling. There is no lymphatic involvement, and no secondary growths in other structures, but one may meet with a rodent ulcer on the face, and an independent variety of malignant growth (*e.g.* scirrhus of the breast) in the same patient.

Though rodent ulcer spreads slowly, its progress is relentless, and it may produce serious destruction of the face with great disfigurement. It may involve the underlying bone, the cartilages of

PLATE XXXIV



RODENT ULCERS AT DIFFERENT STAGES

- (a) Early, slow growing
- (b) Ulcer breaking down after temporary healing
- (c) Ulcer becoming actively destructive

the nose, and the eyeball. In my opinion, if the bone or eyeball becomes involved the case is incurable.

As is the case with all forms of malignant disease, the malignancy is of varying degree. The worst type in this respect is the form known as *Ulcus rodens terebrans* (Fig. 137). Here, side by side with its superficial spread, there is a progressive, relentless involvement of the deeper structures. There is no true tumour formation, but the ulcer spreads slowly, eating its way through subcutaneous tissue, muscles, cartilage, bone, and mucous membrane, until the part of the face involved is completely destroyed, and we can look into a foul cavity with discharging walls, through the broken lining of which one can often see little islets



FIG. 137.—*Ulcus rodens terebrans*.

of necrosing bone, and at the back of which one may catch a glimpse of the posterior wall of the pharynx. In these cases the suffering is considerable; there is sooner or later marked cachexia, and septic pneumonia not infrequently puts a merciful end to the patient's misery. But even in such cases there is no involvement of distant structures, for the disease is and remains only locally malignant.

Diagnosis.—It is essential that no error should be made in the early diagnosis of a rodent ulcer, as such an ulcer recognised at once can be successfully dealt with.

Confusion may arise with (1) *Syphilitic ulceration*. Remember that tertiary syphilis is more common in young adults than in the old. The edges of a tertiary ulcer are not so hard as those of a rodent ulcer.

Further, the "pearly" edge of a rodent is characteristic. A syphilitic ulcer spreads much more rapidly than a rodent; it will make in a week the progress that a rodent will make only after many months. There may be other evidences of syphilis discoverable on other parts of the body, and a tertiary ulcer will yield rapidly to antisyphilitic treatment. In this connection the result of a Wassermann test may be misleading. A patient may give a positive reaction because he once suffered from syphilis; but the lesion he presents at the moment may quite well be a rodent ulcer.

(2) Confusion may also arise with *Lupus*. Lupus is essentially a disease of the young. A tubercular ulcer has soft edges quite different from those of a rodent ulcer, and if one look carefully at the skin round a tubercular ulcer one is almost certain to see some outlying lupus nodules.

In a doubtful case a microscopical examination will determine the diagnosis.

Treatment.—If a rodent ulcer is recognised sufficiently early, and is situated upon a part of the face from which it can be removed surgically without undue disfigurement, free excision is the best treatment. The incision should be carried round the ulcer in the sound skin at some distance from it, and should pass deeply into the subcutaneous tissue. It is advisable to treat the scar with X-rays or radium at a later date.

But all too often the rodent ulcer is situated at a point, *e.g.* the eyelids, or at the inner canthus, where complete surgical ablation is impossible. Here radium treatment offers the prospect of the best results, causing the ulcer to disappear and leaving behind a soft, pliable scar which does not tend to contract and which does not interfere with the free movement of the eyelids. Indeed, radium is of immense service in the treatment of all forms of rodent ulcer, though some are rebellious to it, and though it fails if bone or cartilage is involved.

X-ray treatment is of great use. The dosage should be massive—a full pastille dose repeated thrice at intervals of 21 days—the surrounding skin being thoroughly protected. When the resulting severe reaction subsides, healing should take place.

Superficial rodent ulcers may also be treated with carbon dioxide snow, either without or after preliminary curettage. Pressure should be applied firmly to the pencil of snow, whose base should be somewhat larger than the ulcer, for a period of at least a minute, and if need be the treatment may be repeated when the reaction from the first application has subsided.

Fulguration with a "high-frequency" spark from a metal electrode will also destroy a rodent ulcer.

The older methods of treating rodent ulcers by means of caustics

have largely dropped into disuse. They were dangerous, in so far as their incomplete use sometimes served only to provoke a quiet rodent ulcer into a condition of alarming activity, and it is possible that it was their ineffective employment, rather than any biological peculiarity in the ulcer, which led the older surgeons to call a rodent ulcer *noli me tangere*. But in capable and thorough hands certain caustics often gave excellent results, and I have seen many cases treated by the late Stopford-Taylor with the curette and caustic potash with permanent success.

The chief caustics available for this purpose are in their order of usefulness : potassa fusa, acid nitrate of mercury, chloride of zinc, and arsenical paste.

The True (malignant) Epithelioma of the Skin

Definition.—A malignant tumour of the skin originating from epithelial cells, forming cell nests, involving glands, and spreading by metastasis.

Etiology.—The precise cause is unknown, but chronic irritation predisposes to it, *e.g.* the irritation of tobacco smoke and the hot stem of a pipe (lip cancer) ; cancer of the skin of the abdominal wall from Kangri burns among the Cashmiri ; paraffin cancer on hands and scrotum among shale workers ; chimney-sweep's cancer of the scrotum from irritation of soot ; tar cancer among gas workers or employees in tar refineries, or makers of briquettes ; X-ray cancer from prolonged exposure to fractional doses of X-rays among operators ; cancer of the face and the back of the hands as a result of life-long exposure to bright sunlight among field-workers ; or on patches of lupus (not necessarily treated with the X-rays) ; or on the top of Lupus Erythematosus. Jonathan Hutchinson long ago pointed out that the hyperkeratosis of the hands which may follow the prolonged administration of arsenic may be followed by epithelioma, and I have seen at least one fatal case arising in this way.

Further, epithelioma of the skin may occur in association with warts (especially senile warts) or pigmented moles.

Histo-pathology.—There is a marked proliferation of epithelial cells, which form massive columns, sometimes lobulated, which project downward into the subcutaneous tissue. The cells in the centre of these columns are frequently degenerated. The amount of stroma varies, and typical cell nests are visible. There is, further, some proliferation of blood-vessels with a small-cell infiltration round them. The cells which take the chief part in the formation of the tumour are the cells of the horny layer and the prickle cells.

Signs and Symptoms.—The condition is met with as a rule after middle life, though it may occur in the young (Fig. 138).

An epithelioma begins as a hard nodule projecting above the surface

of the skin. It rapidly breaks through the surface, and at the same time invades the subcutaneous tissue and the underlying fascia. Its surface is uneven, and bleeds easily. It rises from apparently normal skin, but there is a considerable amount of infiltration at the base. It is hard, grows fairly rapidly, and soon produces enlargement of adjacent glands, and in many cases rapid metastases.

Treatment.—The only effective treatment is free removal, with removal of the adjacent lymphatic glands.

Recently Darier has described an intermediate form of primary epithelioma of the skin, which lies, histologically, somewhere between

the basal-cell epithelioma (rodent ulcer) and the prickle-cell epithelioma above described. In this *epithelioma metatypique* there is a mixture of malignant basal cells and prickle cells. It grows more rapidly than a rodent, and may involve lymph glands and form metastases. The best treatment is excision.



[Lent by Dr. Saurard.]

FIG. 138.—Epithelioma of a few weeks' duration in a young woman.

Paget's Disease of the Nipple

Another form of cancer of the skin, of which special mention should be made, is Paget's Disease of the Nipple. It was originally believed that this disease began as a chronic eczematous inflammation of the skin round the nipple in women,

and that cancer of the breast followed it at a variable interval. The researches of Sampson Handley have, however, conclusively proved that the disease is essentially a cancer from the first, and that the apparently eczematous affection of the skin of the areola is not the precursor of the deeper malignant mischief, but is the external visible manifestation of cancerous degeneration of the breast which is already more or less advanced. It is not, therefore, a pre-cancerous condition, but a cancer *ab initio*.

Description.—The condition begins in women as a rule after the climacteric as a spreading, scaly, red patch round the nipple. As it spreads it breaks down, and presents the appearance of an eczema of the areola. Tenderness and pain occur early, and sometimes before any visible symptom has appeared there may have been, for a

prolonged period, a considerable amount of itching of the areola. One side only is affected as a rule. The disease spreads slowly, with periods of intermission during which the "eczema" may dry up. Gradually the whole areola becomes involved, and the "eczema" may spread beyond its limits. The advancing edge of the disease presents appearances that differ materially from the advancing edge of a true eczema. It is frequently somewhat raised and serpiginous in outline. The area involved may exhibit some superficial attempts at healing in its centre, and the nipple becomes retracted, and may indeed be slowly eaten away. The moist surface is studded over with granulations which bleed at a touch, and the colour is of a more vivid red than that of an ordinary eczema. There is a characteristic induration, which has been described as feeling "like a penny felt through a cloth." The disease, progressing slowly, may involve the whole of the skin covering the breast, but long before this there is usually an actual tumour palpable in the breast substance. Involvement of the axillary glands may precede the appearance of any palpable mass in the breast. A similar form of carcinomatous degeneration of the skin may be met with at the umbilicus, on the scrotum, or on the penis.

Histo-pathology.—There is a well-marked small-celled infiltration of the corium, with peculiar changes in the epidermis, which contains cells with large round or kidney shaped, deeply staining nuclei and clear protoplasm round them—the so-called Paget cells. Many of the epithelial cells are vacuolated. There are numerous cell nests, and irregular columns of proliferating epithelial cells grow downwards.

Diagnosis.—Early diagnosis is of great importance, but it must be remembered with care that not every case of eczema round the nipples is a case of Paget's Disease.

True eczema round the nipples is met with, and must be carefully distinguished from the carcinomatous dermatitis of Paget's Disease. True eczema is usually symmetrical. Paget's Disease is unilateral. True eczema usually affects women of child-bearing age, and may develop during lactation. Paget's Disease is usually a post-climacteric condition. Unlike Paget's Disease, true eczema does not produce either destruction of or real retraction of the nipple.

True eczema presents a different colour and appearance. It is not so red; it does not bleed at a touch; it has not a raised advancing edge; and there is none of the characteristic infiltration which one finds in Paget's Disease.

Paget's Disease must also be distinguished from that secondary eczematous dermatitis round the nipples which is often associated with scabies. Indeed, in every case of eczema round the nipples it is

advisable before coming to a diagnosis to make a very careful examination of the whole of the patient's skin with a view to excluding scabies.

Prognosis.—As Paget's Disease is a carcinoma of the breast the prognosis is, like that of all other forms of malignant breast disease, unfavourable.

Treatment.—Confirm the diagnosis by biopsy, then remove the breast by radical operation, clearing out axilla, etc. X-ray or radium treatment will rapidly heal up the superficial condition, but this gives a false sense of security, as only the external danger signal is removed, and the mischief continues in the deeper breast tissues.

Nævo-carcinoma ; melanotic carcinoma ; malignant degeneration of a pigmented mole

For long it was held that malignant degeneration of a pigmented mole was sarcomatous in character. As, however, the pigmented mole is of epithelial origin, the degeneration must be regarded as a form of cutaneous carcinoma. And apart from microscopical evidence there is this clinical fact to support such a classification—the malignant mischief spreads by the lymphatics and not by the veins.

Description.—Malignant degeneration of a pigmented mole usually occurs either in late middle life or in old age. The mole, which rises from skin normal in appearance and texture, suddenly begins to grow rapidly, though painlessly, forming a round protuberant mushroom-like mass. On examination there is evidence of deep infiltration under the base of the mole. Occasionally superficial ulceration occurs, though this is infrequent.

There is early involvement of the nearest lymphatic glands, which enlarge rapidly, and which are sometimes more deeply pigmented than the original tumour. At the same time there is often an involvement of the skin adjacent to the mole by a process of permeation, with the appearance of a crop of small, millet-seed secondary pigmented deposits, arranged irregularly round the main growth. These secondary deposits in the skin may be met with all over the body and they have been found after death in the viscera. A feature worthy of remark is that the lymphatic involvement and the secondary infection of the skin may occur after the original tumour has been removed, even if it has been removed before it had been judged to be malignant, the operation scar remaining healthy the while.

Histo-pathology.—In the epidermis there are masses of epithelial cells devoid of prickles and filled with pigment. In the true skin there is a small celled infiltration and collections of spindle-shaped cells, many of which are pigmented. It is often a matter of great difficulty to tell definitely from the microscopical appearances whether a mole has begun to undergo malignant degeneration.

Treatment.—Early surgical ablation is the one effective method of treatment. The adjacent lymphatic glands should be removed whether they show signs of involvement or not. Once malignant changes have occurred, the prognosis, even with early surgical removal, is not good. Though only a comparatively small number of pigmented moles undergo malignant degeneration, it is worth considering whether it would not be wise to remove them surgically in childhood.

Xeroderma pigmentosum

As Xeroderma pigmentosum is a disease characterised, in one of its phases, by malignant epithelial degeneration, it is included in this section.

Etiology.—Kaposi regarded the condition as a premature senile degeneration of the skin, or a congenital debility of the skin whereby exposure to light and air can produce in a few years changes which, in the normal skin, occur only after a long life of exposure.

Description.—The disease tends to run in families, affecting sometimes only one sex in a family, though this rule is not constant. There is, however, no definite hereditary factor present, as sufferers have parents free from the disease, and may beget children who do not become affected by it. The condition is rare. It begins in the early years of life, usually the first or second year, and the earliest manifestations are generally related to some over-exposure to direct and bright sunlight. The parts affected are the exposed parts of the skin, the face, neck, back of hands, forearms, and, in children who run barefoot, the feet and legs. The initial lesions are reddish-brown, pigmentary deposits indistinguishable at first from ordinary freckles. These early lesions tend at first to disappear, with slight desquamation, and may indeed disappear completely in our climate during the winter months, but they recur with greater severity on further exposure to direct sunlight. Later these freckle-like lesions become permanent. Each is surrounded by skin in which there is some degree of depigmentation, and occasionally one sees between the pigmented spots areas of white skin from which all pigment has been removed. In leucoderma the transition from pigmented to depigmented skin is sharp; in xeroderma pigmentosum it is gradual. The next stage in the evolution of the disease is the appearance of numerous dilated vessels, which form irregular reddish patches. After this, atrophic changes begin to appear, frequently at the site of the telangiectatic areas, and the skin becomes smooth, thin, and loses its normal furrows and wrinkles, but may become cracked and fissured. Sometimes the mucous membranes of the eyes and lips may become affected, the lesions in these regions being constituted by dilatations of the capillaries.

These three stages are but preliminaries to the final stage of the disease, in which appear small, wart-like areas of hyperkeratosis, which

may occasionally disappear spontaneously, but which as a rule gradually declare themselves to be epitheliomata. These malignant growths, which have a predilection for the neighbourhood of the mouth and eyes, progress steadily, ulcerate frequently, are capable of producing great local destruction, and bring about death by cachexia. Secondary growths in the internal organs are rare, but lymphatic involvement is early.

The prodromal symptoms generally appear in the second year of life, and the malignant lesions evolve some years later. Sometimes the latter make but slow progress; in other cases the progress is rapid, and death usually supervenes about the tenth year.

Diagnosis.—In the early stages the disease may not be recognised as it is at first characterised by nothing more than an abnormal tendency to freckles. But when it is completely developed the clinical picture is so striking that it should not be missed.

Prognosis.—The prognosis is bad. Practically every case dies in early youth. With care one may sometimes delay the fatal issue, but to prevent it seems, in the present state of our knowledge, impossible.

Treatment.—In families in which there is a tendency to the disease, scrupulous protection from the actinic rays of the sun should be practised. The child should wear a broad-brimmed hat, the brim being lined with Turkey-red cotton. Protective pastes containing ichthylol or quinine may also be used. In some respects xeroderma pigmentosum presents features analogous to those produced among X-ray workers by prolonged exposures to fractional doses of X-rays. The hyperkeratoses may be treated, as one may treat X-ray warts, with solid carbon dioxide snow.

X-ray therapy has been recommended, but it seems to me irrational. Radium has also been recommended. When the tumour stage is reached excision offers the best hope of prolonging the patient's life, but unfortunately the growths tend to recur, and others are constantly appearing on the adjacent skin.

HYPERTROPHIES OF AND NEOPLASMS ORIGINATING IN THE TRUE SKIN; DERMIC GROWTHS

The corium or true skin is a complex structure, and tumours, innocent or malignant, may arise from any of its constituent parts, *e.g.* from its fibrous elements, from its elastic tissue, from the essential cells of the derma, from blood-vessels, lymphatics, or smooth muscle.

I. BENIGN NEOPLASMS

FIBROMA

Fibromata are innocent neoplasms consisting of fibrous connective tissue cells. Sometimes they are myxomatous. When met with singly, their

usual situation is the scalp or back. If multiple, they occur all over the body.

They rarely, if ever, disappear spontaneously, and may undergo malignant changes.

The fibroma varies in character and consistence, according to the nature of the fibrous tissue from which it arises. We therefore meet with what are known as soft fibromata, small tumours, easily compressible, which, except for their colour, look and feel like empty raisin skins. At the other extreme, we meet with the hard fibroma or *desmoid*. Between these two varieties are sundry intermediate types.

KELOID

Histologically a keloid is a **fibroma**.

Definition.—Keloids are tumours composed of cicatricial tissue, and are of two varieties: (1) The spontaneous or *idiopathic Keloid*, and (2) the *Keloid which follows a trauma*. There is a subsidiary variety, viz. the hypertrophic or keloidal scar.

Description.—The **spontaneous keloids** arise from apparently normal skin without visible cause. They are commoner among the coloured races than among whites, and negroes seem specially prone to them. They are met with chiefly in youth, and a tubercular diathesis seems to give a predisposition to their development. Their sites of election are the skin on the front of the chest, more particularly over the sternum, but they may occur on any other part of the body. As a rule they are single, but they may be multiple. Each consists of a hard, somewhat raised tumour, irregularly quadrilateral in shape, with its long axis more or less parallel to the line of the ribs. At each extremity, and frequently along each edge of the main tumour, are a number of pale or reddish claw-like extensions into the sound skin. Hence the name (from $\chi\eta\lambda\eta$ a crab).

Keloids develop slowly, growing for several months and then becoming stationary. Sometimes they undergo spontaneous resolution, in which case they may or may not leave a scar. Though they are called spontaneous, and apparently arise without cause, there is little doubt that many of them take origin in an acne lesion, or in consequence of a superficial scratch. As a rule they are painless, but there may be some sensation of burning or itching.

(2) **Secondary keloids** follow a definite and recognisable trauma such as a wound, the application of caustics—intentional or accidental—burns, scalds, and even vaccination (Fig. 139). They may also follow tubercular lesions, or operations of any kind on such lesions.

An essential clinical difference between true keloid and the secondary keloid is that the former has no natural limit to its extent or spread, while the latter does not overpass the limit of the original injury.

Histologically the two are distinguishable in so far as the traumatic keloid is covered by cicatricial skin devoid of papillæ, while in the spontaneous variety the papillary layer remains and is only lifted up and stretched by the tumour. The colour of the secondary keloid is at first bluish, but it tends to fade in time.

Sometimes these traumatic keloids are painful, in consequence of the inclusion in the fibrous mass of a sensory nerve-ending.

Diagnosis.—The condition is easy to recognise, though, where the history is indefinite, it may be difficult to decide whether a keloid is to be regarded as a spontaneous or a secondary one.

Prognosis.—The prognosis as to life is good, though it must not be forgotten that now and then a keloid undergoes malignant degeneration.

Treatment.—Surgical treatment is unsatisfactory, for after excision keloid tends to recur in the new scar, even if union is immediate. The tendency may be lessened, and possibly prevented, if during the process of healing the new scar is subjected to massive doses of X-rays.

Palliative treatment, which sometimes does good, is the application for prolonged periods of 10 per cent. salicylic plaster, or mercurial plaster. I have seen the hypertrophic scars which followed an operation for tubercular glands in the neck disappear under the prolonged use of an ointment of 10 grains of Hydrarg. Ammoniatum in an ounce of zinc ointment. The pepsin digestion of keloids has not given me good results.

Electrolysis, the needle being attached to the negative terminal and passed through the keloid mass at short intervals with a current of 2-3 milliamperes, each insertion being for 20-30 seconds, may, in the course of some months, produce considerable improvement.

The application of CO_2 snow is disappointing.

The best results are obtained from radium treatment, which often causes the keloid to disappear, leaving behind soft, elastic and somewhat pale skin.



FIG. 139.—Keloid following a burn.

Injections of fibrolysin or thiosinamin have, in my experience, yielded only poor results.

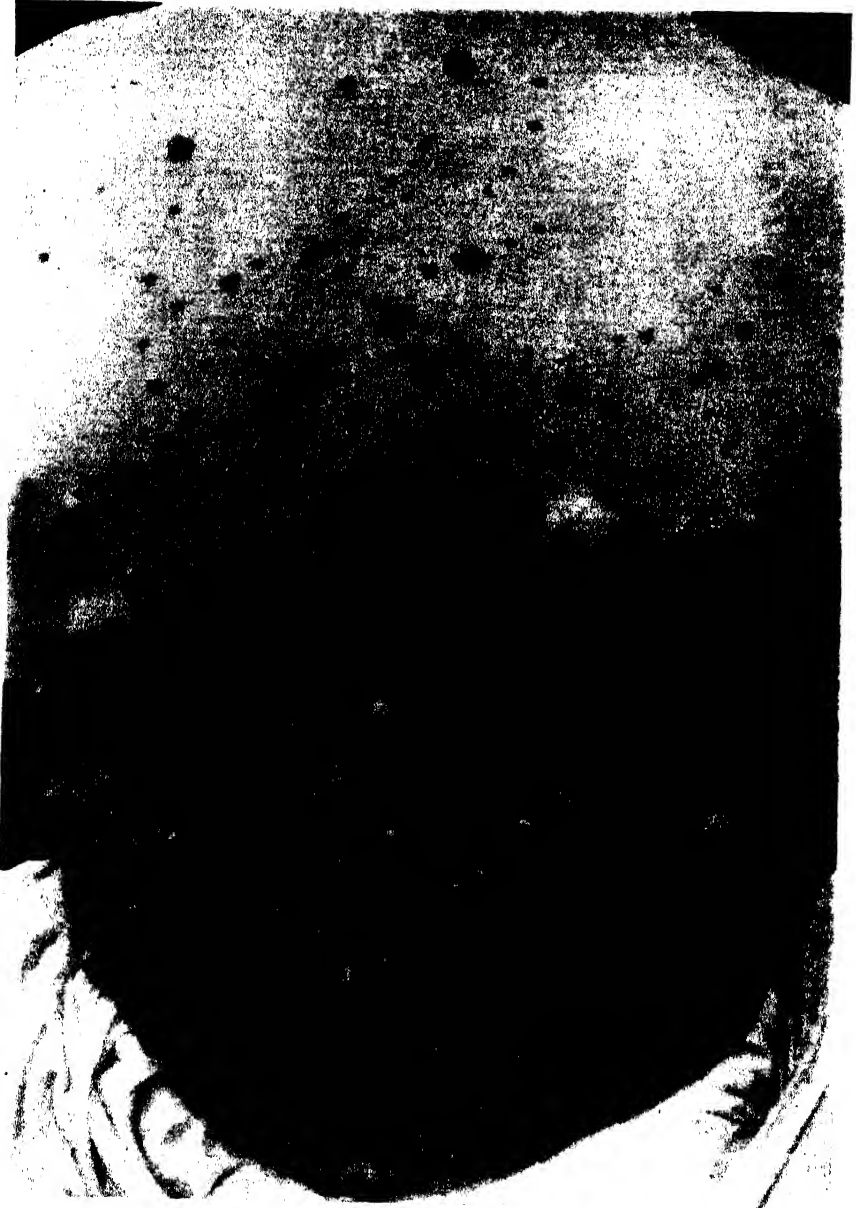
Sometimes in keloids which follow tubercular lesions or operations upon such lesions, there is a great improvement, and possibly spontaneous disappearance of the tumour, when the general health improves.

Multiple fibromatosis ; Molluscum fibrosum ; Neuro-fibromatosis ; Von Recklinghausen's Disease

Definition.—A rare disease, characterised by the development all over the skin of multiple fibrous tumours, believed by Von Recklinghausen to originate from the connective tissue of the nerve sheaths.

Etiology.—The precise cause is unknown ; but heredity is a

PLATE XXXV



MOLLUSCUM FIBROSUM

strong factor. Some aberration in the functioning of the endocrinous glands has been suggested as a possible cause. Schneiderman holds that the disease is due to an embryonic fault in the ectoderm.

Description.—The disease begins in infancy, or may be already in existence at the time of birth. It affects both sexes in equal proportion. At first the tumours are small and few, but they tend to increase in size and number with age. In a severe case they may number many hundreds and may be scattered over the whole surface of the skin, and may, through their size, weight, and situation, interfere with locomotion. Sometimes the tumours follow the lines of nerves, and occasionally pain may result from the inclusion of a sensory nerve twig; but this is rare. Sometimes a generalised neuro-fibromatosis is associated with an elephantiasis-like thickening of the thigh and legs.

There are three special types of growths: (1) the sessile, a soft flesh-coloured or brownish tumour, sometimes with a tinge of lilac in its colour; (2) the pedunculated; (3) the empty raisin-skin tumour (Plate XXXV). Occasionally the tumours are painful on pressure, some of them containing tiny nerve fibrils. The intermediate skin is frequently splashed over with buff-coloured or *café-au-lait* macules. Sometimes these pigmented macules may appear before any of the tumours evolve. As a rule patients suffering from this condition are of low intelligence, and may be mentally peculiar and exhibit stigmata of degeneracy. Sometimes there are skeletal changes.

Diagnosis.—This presents no difficulty, and once a well-marked case has been seen it is not readily forgotten.

Prognosis.—The disease is incurable, but the prognosis as to life is good. It is only in rare cases that the number, size, and situation of the growths interfere with the patient's efficiency.

Treatment.—The only possible treatment is surgical removal of the larger and more troublesome tumours if need be. Their great number and wide distribution prevent the ablation of all. Recently evidence has been adduced to link up Recklinghausen's disease with deficient endocrinous gland-activity. Hypopituitarism and deficient functioning of the thyroid and suprarenal glands have been suggested as possible causes, and organotherapy has been recommended. Mallam * reports a case which he believes to have been associated with a destructive tumour of the pineal gland. Many of the tumours disappeared under treatment with thyroid extract.

OSTEOMA

Occasionally deposits of bone are met with in the skin. The condition is congenital, but very rare. I have seen only one case. The patient was a little girl, and the plates of bone which were multiple and distributed over

* *Brit. Journal of Derm. and Syph.*, July 1922, p. 239.

the trunk and limbs—the face and neck being free—felt on palpation like pieces of resilient cartilage.

The diagnosis, which one may suspect on clinical evidence, must finally be made by the microscope.

Treatment.—Surgical removal.

MYOMA

Leio-Myomata, or smooth muscle tumours of the skin, are extremely rare. They are met with, when they occur, chiefly in those areas where smooth muscle is most plentiful, *e.g.* on the scrotum, the labia majora, and the neighbourhood of the nipples. They vary in size from a pea to a hen's egg.

Multiple leio-myomata, small reddish tumours, sharply circumscribed and circular or oval in shape, scattered all over the body, have been met with. These are usually associated with considerable paroxysmal pain. They are supposed to arise from the erector pilæ muscle fibres.

The only treatment is excision.

Sarcoids, which are dermic new-growths, have already been dealt with (p. 75).

LIPOMA

Definition.—A Lipoma is a tumour composed of fat.

Description.—Lipomata of the skin arise in the fat of the subcutaneous connective tissue, and may be met with in all shapes and sizes. They are most frequent after middle life, though they may be met with as congenital tumours, in which case they are multiple. They are frequently flat masses, consisting of several lobules, soft and elastic to the touch, and may give the impression of containing fluid. Sometimes they are protuberant, and may become pedunculated through the traction of their weight. In this variety, the overlying skin is sometimes thinned out, and external injuries may set up inflammation and even gangrenous processes in the tumour mass.

Sites of predilection are the breasts in women, the buttocks, the supra-clavicular fossa, and the neck. They are met with more rarely on the face, scalp, and genitals. Occasionally one meets with diffuse lipomata associated with general adiposity.

Treatment.—Removal by surgical means. There is no tendency to recurrence.

XANTHOMA ; XANTHOMA TUBEROSUM ; XANTHOMA MULTIPLEX

Definition.—Xanthoma is a neoplasm of the skin, of a yellow colour, from which fact it takes its name.

Recent research by Pollitzer has shown that *Xanthelasma* (the yellowish deposits met with at the inner angles of the upper and lower eyelids in women) are not true neoplasms, but are due to fatty degeneration of the fibres of the orbicularis palpebrarum. Xanthelasma must therefore no longer be confused with Xanthoma tuberosum, which is a connective tissue hyperplasia.

Etiology.—The etiology is obscure. Probably the disease depends upon some error in metabolism. The blood of patients affected contains excess of cholesterin. Experimental work has shown that if rabbits be fed with cholesterin, xanthoma tuberosum can be produced at sites on their skin injured by a seton.

Histo-pathology.—On section, the lesions are found to consist of large masses of round or oval cells, filled with fatty material held together by a connective tissue stroma. The amount of fat in these *Xanthoma* cells is so great that it is only after its partial removal by chemical means that one can see the nucleus, which is often multiple. The *Xanthoma* cells are found chiefly in the lymph spaces of the cutis. The fat in the cells is of a bright yellow colour, and on this the colour of the tumours depends.

Description.—Clinically the condition is easily recognised. One finds on the limbs, more particularly over the extensor aspect of joints such as the knees, the elbows, or the back of the ankles, and only rarely on the trunk, one or more yellowish or orange-coloured tumours, varying in size from a pea to a nut. They develop slowly. They are soft-solid to the touch, and rarely is there any pain on pressure. Sometimes they occur as plaques, sometimes as definitely protuberant growths. Isolated and adjacent tumours may grow together and form little clumps. They have no natural tendency to become inflamed and break down. Their evolution is slow, their progress indolent. They multiply over a period of months or years, then remain stationary, without exhibiting any tendency to retrogression.

Both sexes are affected, but, in my experience, the condition is much more frequently met with in women. As a rule, the tumours first appear in early adult life. Their starting point is often stated by the patient to date from some illness, but this may be a mere coincidence. There would seem to be a family and hereditary tendency to the condition. Sometimes it is associated with chronic jaundice.

Though the sites of election for the lesions are the extensor aspect of the joints, *Xanthomatous* plaques may be met with on the flexor aspect of the limbs, on the front of the wrists, the palms of the hands, the popliteal space, and the folds of the neck. Occasionally, though exceptionally, these neoplasms may affect the conjunctiva, the respiratory or alimentary mucosa, and even the viscera.

Prognosis.—As to life, the prognosis is excellent, the disease being quite innocent and free from any malignant tendencies, but the growths rarely disappear spontaneously.

Diagnosis.—This is not difficult, but confusion may arise with (1) *Xanthoma diabeticorum*, (2) *Urticaria pigmentosa*.

The presence of glycosuria distinguishes the former, while *urticaria pigmentosa* has a different age incidence, being a disease of childhood, and is macular (though nodules may occur), while *Xanthoma* is nodular or tumour-forming. In colour, *Urticaria pigmentosa* is brownish; *Xanthoma* is canary-yellow. Further, if a lesion of *urticaria pigmentosa* be rubbed briskly, one gets an immediate urticarial reaction. Histologically the diseases are quite distinct.

Treatment.—Excision, when possible, will remove the growths; but as they cause little trouble the patient usually prefers to have them left alone. Palliative treatment with salicylic plasters may lead to the spontaneous elimination of small tumours, and X-ray treatment, carried to the extent of slight dermatitis, will sometimes cause the tumours to disappear.

XANTHOMA DIABETICORUM

Three chief characteristics distinguish this disease from *Xanthoma tuberosum*. (1) The presence of glycosuria. The urine should be examined carefully, and on more than one occasion, in all cases of *Xanthoma*. (2) The

colour of the lesions, which in *Xanthoma diabeticorum*, though yellowish, has a definitely red tint, associated with a considerable degree of hyperæmia round each lesion. (3) The tendency of the lesions to disappear spontaneously or to come out in crops and grow rapidly, the evolution and involution of the tumours following pretty accurately the sugar-excretion curve.

Further, the face is very rarely affected in *Xanthoma diabeticorum*, the sites of election being the extensor aspects of the elbows and knees, the hands and buttocks. Here it may be well to call the attention to a possible confusion between *Xanthoma diabeticorum* and a yellowish-red pigmentation of the skin due to *carrotin*, in patients whose diet has contained a large quantity of carrots.

XANTHELASMA ; XANTHOMA PLANUM ; XANTHELASMA VITILIGOIDEA

Definition.—A disease due to fatty degeneration of the fibres of the orbicularis palpebrarum muscles.

Description.—This is a disease of adult life, which affects women much more frequently than men. It is characterised by the development of whitish-yellow, or brownish-yellow, superficial flat tumours varying in size from a pea to a threepenny piece. In contour they are round, oval, or rectangular with rounded corners. Usually they are situated at the inner angle of the orbit, on the upper lid, though they may be met with at the outer angle and affect the lower lid also.

I have never known them interfere with the free movement of the eyelids, and their only drawback is their unsightliness.

Treatment.—The fatty mass of which these growths consist may be effectually charred with the electro-cautery needle. This must be done with great care. The result is a smooth whitish scar. If the treatment is carried out badly there is a danger of keloidal scarring supervening, with consequent ectropion.

(1) BLOOD-VESSEL AND LYMPH-VESSEL OVERGROWTHS

Angioma ; Vascular nævus

Three varieties interest the dermatologist.

1. **The spiderly nævus**, usually met with on the nose, or just below the orbit, and consisting of a central tuft derived from a dilated venule or sometimes arteriole, surrounded by a few ramifying tiny vessels, which fade away into the healthy skin. These spiderly nævi are rarely congenital, sometimes develop in early infancy, but usually appear in childhood or adult life, and sometimes follow a scratch or an insect bite. Treatment is by the destruction of the central vessel, either by electrolysis or a mild application of a moderately heated galvano-cautery needle.

2. **The port-wine stain** (*Nævus flammeus*), or capillary nævus, is a sessile nævus, not elevated, except occasionally at a few points, above the surface of the normal skin. The common situation is the side of the face or neck (Fig. 140). These nævi are bluish-red in colour, and are produced by an enormous increase in the number of and

dilatation of the veins and venous capillaries situated in the true skin. As the mischief is in the texture of the skin, treatment is very difficult. CO_2 snow may produce some improvement, though, in my hands, it has been disappointing in this condition. Applications of radium sometimes lead to obliteration of some of the vessels; but, on the whole, the treatment of a port-wine stain is disappointing. The occasional venous excrescence on the surface may be treated with the galvano-cautery.

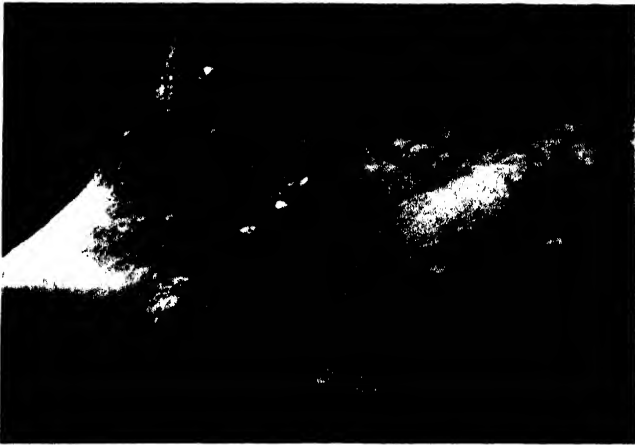


FIG. 140.—Nævus flammeus; Port-wine stain.
In this case there were many nævoid excrescences.

3. **The cavernous nævus**, or elevated hæmangioma, consists of an overgrowth of arterial and venous capillaries which form a small tumour of a bluish-red colour which projects above the surface of the skin (Fig. 141). These nævi may occur anywhere, but their commonest sites are the scalp, the face, and the neck. They are congenital, but are sometimes not observed till some time after birth. Sometimes they remain almost stationary, sometimes they grow rapidly. Usually their surface is covered with dilated capillaries.

Treatment.—If small and on the scalp they should be excised. On the arms or legs in infants, the superficial capillaries may be obliterated by vaccinating upon them.

On the face, etc., the best cosmetic results are obtained from the use of CO_2 snow. The cone applied should be just a trifle larger in area than the surface treated. Pressure should be applied firmly, and the application should last for from 40-60 seconds according to the size of the nævus. A vigorous reaction follows, with the production of a gelatinous blister, some superficial sloughing and ultimate healing. If need be, a second application of CO_2 snow may be made later. It

is always well at the first treatment to do a little too little, rather than a little too much.

Nævi of this kind may also be destroyed by fulguration with a high-frequency spark, or by applications of radium. They may also be treated by electrolysis, but the CO₂ snow treatment is, in most cases, the method of choice.



FIG. 141.—The common type of vascular naevus. Angiomatous naevus.

Lymphangioma ; Lymphatic naevus

The lymphatic naevus is rare. In structure it corresponds to the vascular angioma, except that the vessels are lymph vessels, the spaces lymph spaces, and the contents lymph.

Two varieties are met with, (a) *lymphangioma simplex*, composed of an aggregation or scattered tufts of dilated lymph vessels, and (b) *lymphangioma cavernosum*, arising from the confluence of a number of lymph spaces.

PLATE XXXVI



LYMPHANGIOMA SIMPLEX

Note the resemblance to Herpes

Lymphangioma simplex ; Lymphangioma circumscriptum

This form consists of one or more patches or groups of somewhat translucent vesicles of a brownish or yellowish colour, some of which are capped by a horny excrescence, which gives them a warty appearance. The condition is probably congenital, though it may not appear till late in childhood, when it tends to spread. Many of the vesicles constituting the group show capillaries on their surface, and the skin between adjacent vesicles may be studded with telangiectases. The vesicles spring from the true skin, and round the edges of the chief patch isolated vesicles are usually present. The whole condition may, on a superficial glance, suggest a collection of herpetic vesicles, but there is neither pain nor associated inflammation, unless a secondary infection occurs. Frequently it is for this secondary infection that the patient seeks relief, so one must be on one's guard lest one fall into error.

The commonest situation for the condition is the front, back, or sides of the neck, and the back and the chest, especially in the neighbourhood of the axillæ (Plate XXXVI).

Treatment is by excision or destruction with CO₂ snow, the galvano-cautery or fulguration with a high-frequency spark.

ANGIOKERATOMA

A rare affection of the skin characterised by telangiectases and pin-head angiomatous tumours capped by small, warty, greyish or greyish-red transparent nodules of horny material, studded with blackish or red dots. The fingers affected sometimes look as though they had been stained with black-berry juice. The condition follows severe chilblains. The lesions appear chiefly on the backs of the hands, fingers, and toes of young people, or on the ears, usually symmetrically. There are no subjective symptoms, and the lesions may disappear spontaneously, or remain permanently.

Clinically they bear a distinct resemblance to the telangiectases, with hypertrophy of the horny layer, sometimes seen after X-ray treatment.

Treatment by electrolysis has been recommended by Pringle. They may also be treated with CO₂ snow or the galvano-cautery.

(2) MALIGNANT NEOPLASMS ARISING IN THE CORIUM**Sarcoma**

Sarcoma of the skin may be primary or secondary, the latter being due to metastases. Here we have to do only with the primary variety, of which there are two kinds, viz. Melanotic Sarcoma, and the simple Sarcoma.

Melanotic Sarcoma usually begins on the hands or feet as brown or bluish-red soft tumours of varying size, single or multiple. Metastases are rapid, and the tumours spread. Occasionally they break down and ulcerate. There is no involvement of the lymphatics. Death ensues more or less rapidly through metastases to internal organs and cachexia.

The treatment is surgical, and somewhat hopeless.

The melanotic malignant tumour which develops on a pigmented mole is a melano-carcinoma (*q.v.*, p. 414).

The *idiopathic simple sarcoma* of the skin appears either as a single or multiple growth. It consists of a soft elastic tumour of varying size covered with normal epidermis, and coloured vivid or dark red. Ulceration may occur, and metastases either in the skin or the deeper organs are practically invariable. If excised early, such a sarcoma may not recur, but most cases end in death by metastases to vital organs.

Here it is convenient to include a malignant disease of the skin the precise nature of which is still undecided.

Mycosis fungoides

Description.—This rare malignant disease of the skin is of unknown origin. In spite of its name it is not mycotic. As a rule there is a long prodromal stage, which may last for months or many years, during which the patient suffers from eruptions of various kinds—erythrodermia, eczematiform, psoriasiform, or urticarial eruptions, all of which are extremely intractable, very irritable, and do not yield to the remedies usually successful in such conditions. During the prodromal stage the scalp is often scurfy and the hair may fall. It is probable that just as the so-called eczematous stage in Paget's disease of the nipple is essentially a malignant condition from the first, so these "premycotic" manifestations in Mycosis Fungoides are also malignant. Sooner or later there develop, either at points already affected by these premycotic eruptions or on parts of the skin hitherto unaffected, areas of infiltration, of a brownish colour, which extend peripherally. In these areas of infiltration tomato-like, margined soft red tumours appear, which tend to break down and discharge a foul-smelling pus (Fig. 142). These tumours may disappear spontaneously without leaving a scar, but others appear elsewhere, and the patient ultimately dies from exhaustion. During the tumour stage there is a continuance of the eczematous or psoriasiform eruptions of the premycotic stage, the intense itching usually persisting. Sometimes the tumours are present from the beginning of the affection (Mycosis fungoides d'emblée), but this is rare.

Glandular involvement is rare, and, if it occurs, is probably due to a secondary pus infection.

An examination of the blood usually reveals some diminution of erythrocytes, with a moderate degree of eosinophilia and leucocytosis.

Histo-pathology.—On section the tumours are seen to consist of masses of round cells, poor in protoplasm, situated in the corium, and held together by a fine fibrillary meshwork. Probably the disease is related to the sarcomata, though some still believe it belongs to the group of the infective granulomata.

The **diagnosis** is often difficult, but is based on the long history and the development of the characteristic cherry or tomato-like tumours, and the polymorphic eruptions of the premycotic stage.

Treatment.—Internal treatment by arsenic to the limits of toleration sometimes gives good results. Intravenous, intramuscular, or subcutaneous injections of salvarsan preparations may be tried.

In the premycotic stage the eruptions sometimes yield to chrysarobin or pyrogallie acid, grs. x. in $\bar{3}$ i. of zinc ointment.

But the best results are obtained from X-ray therapy, which may bring about the disappearance not only of the premycotic eruptions,



FIG. 142.—Mycosis fungoides.

[Photo by Dr. Gram.]

Note the characteristic tumours, and the remains of the premycotic eruption.

but also of the tumours. Where there are many tumours, X-ray treatment must be applied with great caution, as death may supervene rapidly, with delirium and a high temperature, if massive doses of the rays lead to the quick absorption of multiple growths.

An isolated tumour may be excised. A breaking-down tumour should be dressed with compresses of perchloride of mercury (1-4000), acriflavine (1-4000), or eusol (1-5000).

The **prognosis** is bad, as the tumours tend to recur even after their disappearance under treatment.

Death ensues by exhaustion or from intercurrent affections.

Leukæmic Dermatoses

Here it is convenient to mention certain dermatoses which are, occasionally, met with in association with leukæmia. About one-third of all cases of lymphadenoma present cutaneous lesions at some period of their course. These dermatoses have many features in common with the eruptions met with in the premycotic stage of *Mycosis fungoides*. They assume the form of intensely pruriginous eczematous lesions--sometimes grouped, sometimes scattered--and they are followed by diffuse swelling and infiltration of the affected skin which may go on to actual tumour formation.

Sometimes the dermatosis may express itself as a generalised erythrodermia; sometimes as a chronic and intractable type of urticaria. If the patient lives long enough, tumour formation is almost certain to follow these dermatoses.

The treatment is that adopted for the blood dyscrasia—arsenic in large doses.

The local symptoms may be treated with soothing and anti-pruritic lotions or ointments. X-rays are often of use as they quieten the pruritus, and sometimes cause the temporary disappearance of the visible lesions. But unless the primary disease of the hæmopoietic system can be cured the eruptions tend to recur.

(NOTE.—For a series of highly instructive papers by Drs. J. A. Murray, A. Leitch, and E. L. Kennaway, on the association of cancer of the skin with chronic irritation from tar, paraffin, and arsenic, see the *British Medical Journal*, Dec. 9th, 1922.)

CHAPTER XXVI

DISEASES OF THE NAILS

THE nails are appendages of the skin, and consist of modified epidermic cells firmly welded together. They are rectangular horny plates, with a dorsal convexity, and are somewhat thicker at the free edge than the base. They rest upon a furrowed bed, to which they are firmly attached, and from this, as well as from the groove or fold in the skin in which the posterior end, the root or matrix, is embedded, new cells are constantly being added to the nail. Laterally the epidermis folds over the edge of the nails, and forms the nail wall. The lunula is a whitish crescent at the base of the nail, which owes its colour to the fact that the dermis is less vascular here than under the rest of the nail. In a person in normal health a nail grows its own length in about six months.

DISEASES OF THE NAILS

Most pathological changes in the nails are secondary to disease affecting the nail matrix. The nail matrix may be affected by general diseases or by diseases affecting the skin.

Changes in the nail substance, without antecedent disease of the nail matrix, may be produced by the fungi of ringworm and favus (*q.v.*, pp. 151 and 157).

The chief affections of the nails of interest to the dermatologist are—

(1) Congenital absence or deficiency of the nails : **Anonychia**.—This congenital condition may affect several members of a family. It may be hereditary through several generations. Sometimes all the nails are absent ; sometimes only one. Occasionally rudiments of the nails are present. The condition lasts all through life and is incurable.

Acquired onychia is due to the destruction of the nail matrix by disease, *e.g.* syphilis, suppurative processes, trauma, etc. Occasionally nature succeeds in these acquired cases, which do not generally affect all the nails, in producing fragments of nails to take the place of those lost.

(2) Separation of the nail from the nail bed : **Onycholysis partialis**.—Any growth, innocent or malignant, occurring under a nail will produce its partial separation from the nail bed. The accumulation of scales beneath the nails in psoriasis, chronic eczema, ringworm, favus, and other diseases, will produce a similar result. One or more nails may be affected, *e.g.* if the cause is an underlying growth, one nail will be involved ; if it is due to a disease like psoriasis, all the nails may be affected. Sometimes spontaneous cure occurs ; often the condition disappears with the associated disease.

(3) **Koilonychia** or “ spoon-shaped ” nails are due to the accumulation of horn cells under their lateral and free edges. These parts are raised up, while the centre of the nail, attached to the nail bed, remains depressed, and

tends to become thin. The nails then present a concave appearance like the bowl of a spoon.

(4) **Leuconychia**: *punctata, striata, et totalis*.—This term is applied to abnormal whiteness of the nails, which may appear as small white dots (*L. punctata*) or in striæ (*L. striata*), or involve the whole nail. The white colour is due to bubbles of air in the nail substance. The cause is unknown. It may be neurotrophic, or it is sometimes due to injury. Sometimes it is congenital and hereditary.

(5) **Onychogryphosis**.—In this condition the nails are enormously hypertrophied: coarse, thickened, intensely hard or friable, striated, and discoloured. The hypertrophy is due to enormous proliferation of horn cells from the nail bed. The anterior half of the nail is usually ultimately raised up from the nail bed, and the nails come to resemble claws. The cause is unknown; it may be due to a tropho-neurosis depending on varied conditions, or to injury.

(6) **Onychauxis** or **Megalonychia**—simple overgrowth and enlargement and thickening of the nails—is met with in acromegaly.

(7) **Shedding of the nails** may follow suppurative processes due to septic infections of the nail bed; hæmorrhages under the nails due to trauma; or some skin diseases; e.g. psoriasis, eczema, exfoliative dermatitis, pityriasis rubra pilaris, etc.

(8) **Ingrowing toe-nail** (UNGUIS INCARNATUS) is usually met with on the great toe. Through careless paring of the nail a sharp corner is left at one side, which grows and pierces the skin, boring its way further in daily. It sets up pain, inflammation, and swelling.

Treatment is prevention. The corners of the nail should always be rounded. If the nail has “grown in,” the offending edge should be raised gently from the trough it has cut in the flesh, and a piece of tin-foil or absorbent wool should be placed under it and changed daily, till the nail has grown sufficiently to enable it to be cut transversely, with rounded corners. If suppuration occurs it should be dealt with by means of antiseptic compresses. The tendency to ingrowing toe-nails may be lessened if the convex dorsum of the nail be kept thin by scraping with a file or piece of glass. Sometimes it is necessary to remove an ingrowing toe-nail, either wholly or in part. This may be done under gas, or local anaesthesia.

Fragility of the nails may be constitutional, neurotrophic, or gouty in origin.

Roughness of the nails may be due to syphilis.

Transverse furrowing of the nails—a single furrow running across each nail—often marks the date of a severe illness, e.g. scarlet fever, typhus, etc. (Fig. 166).

Multiple furrowing, transverse or longitudinal, may be associated with rheumatism, gout, psoriasis, eczema, lichen planus, pemphigus, and other skin diseases. Sometimes one long elevated ridge will run longitudinally from base to free edge of the nail, the lateral halves of the nail sloping away from it like the two sides of a roof. The cause is unknown, but the gouty diathesis may be responsible.

A pitted or worm-eaten appearance of the nails is very characteristic of psoriasis.

The treatment of diseases of the nails is difficult, requiring great patience. The treatment of fungoid diseases of the nails has already been dealt with. Changes in the nails due to psoriasis, eczema, etc., tend to get well as the disease of the skin improves.

Many conditions can only be dealt with by removal of the nails and the thorough treatment of the nail bed and nail matrix. Short of this, X-ray therapy will sometimes produce improvement.

Arsenic, iron, strychnine, colloid sulphur, and glandular extracts are the internal agents from which something may be expected.

Locally, in suppurative processes, bichloride of mercury lotion (1-4000), and an ointment of ζ i. Ung. Hyd. Nit. Dil. in ζ i. of Ung. Acidi Salicylici, are often of use.



FIG. 143.—Severe transverse furrowing of the nails following an acute illness.

Oleate of tin often exerts a beneficial effect on diseased nails, and may be applied as a 10 per cent. ointment in Ung. Zinci Oxidi.

Hangnail.—A “hangnail” is a fragment of skin along the lateral border of a nail, or at its base, separated by friction, careless clipping, manicuring, or nail-biting. In some people there is a marked tendency to “hangnail.” It is at first composed of nothing more than the superficial layers of the skin, but it tends to tear back into the true skin, and may afford a portal of entry for pus organisms, or the *spirochaeta pallidum*. The best treatment is prevention, but if a hangnail is accidentally produced it should be cut off short at the base, and the exposed corium, after careful disinfection, should be protected with flexile collodion.

APPENDIX

Starch and Boric Poultices.—Add one teaspoonful of boracic powder to a tablespoonful of powdered starch, and mix with cold water to the consistency of a thin cream. Pour on *boiling* water and stir briskly with a hot spoon till a jelly is formed, by the rapid swelling and rupture of the starch granules. The jelly should be so thick that the spoon will stand up in it. If the jelly is too thin, it may be made to thicken by bringing it to the boil in a pan. Allow to cool and keep in a jam jar covered with G. P.-tissue. For use, spread the jelly $\frac{1}{4}$ – $\frac{1}{2}$ inch thick upon wet lint, spread a single layer of butter-muslin over the surface of the jelly to keep it together; back the whole with oiled silk or G.P.-tissue, and apply the muslin-covered surface to the area to be treated. Change every 12–24 hours. The poultices are of great value for the removal of crusts, and form a cool, soothing application for inflamed surfaces. If continued too long they tend to macerate the epidermis.

Baths.—The formulæ for several baths have already been given in the text.

Bran Baths are prepared by placing a muslin bag containing three pounds of bran in thirty gallons of water. The bag should be placed directly under the hot tap, and as the bath fills the demulcent constituents of the bran are carried into it. Bran baths are soothing, and are of use in all irritable dermatoses.

Soda Baths may be of varying strength; one-half to one pound of bicarbonate of soda in a thirty-gallon bath being the usual proportion. They are of special use in pruritus and urticaria. The duration of a bath—unless a more prolonged immersion is indicated—should be 20–30 minutes; and the temperature should be kept between 100°–102° F.

In addition to the formulæ given in the text the following prescriptions may be of service :—

Acne Vulgaris :

R. Resorcin, grs. viii.
Acidi Salicylici, grs. iv.
Spirit. Vini Rect., ℥ii.
Aq. Rosæ, ad ℥i.
M.

Sig. Apply several times daily.
(Useful in mild cases.)

R. Acidi Salicylici, grs. xxx.
Sapon. Mollis Virid.
Paraffini Mollis, āā ℥ss.
M.

Sig. To be rubbed in at night and washed off in the morning. (Useful for acne of the back. Too strong for most cases of acne on the face.)

R. Hydrarg. Perchlor., gr. $\frac{1}{4}$.
Resorcin, grs. x.
Spirit. Vini Rect., ℥iii.
Aq., ad ℥i.
M.

Sig. Apply several times daily.
(Useful in cases with mild pustulation.)

R. Hydrarg. Oxidi Rubr., grs. v.
Hydrarg. Ammon., grs. viii.
Lanolini, ℥i.
Paraffini Mollis, ad ℥i.
M.

Sig. Apply night and morning.
(Useful in indolent and suppurating cases.)

Alopecia Areata :

R. Hydrarg. Perchloridi, gr. i.
Tinct. Capsici, ℥iss.
Tinct. Cantharidis, ℥iii.
Glycerini, min. xlv.
Aq., ad ℥iii.

M.

Sig. To be rubbed in night and morning.

R. Liq. Ammon. fort.
Chloroformi.
Olei Sesami, āā ℥ss.
Olei Limonis, ℥ss.
Spirit. Rosmarini, ad ℥iv.

M.

Sig. Apply once daily (Stel-wagon).

Chilblains :

R. Ichthyol, ℥i.
Resorcin, ℥i.
Acidi Tannici, ℥i.
Aq., ℥v.

M.

Sig. To be painted on every night (Boeck).

R. Pot. Iodidi, grs. iv.
Iodi, grs. x.
Menthol.
Camphor, āā grs. viii.
Lanolini, ℥i.

M.

Sig. Apply night and morning (after Max Joseph).

Eczema :

R. Ichthyol, ℥i.
Olei Olivarum, ℥ss.
Aq. Calcis, ℥ss.

M.

Sig. Apply on strips of lint (in the erythematous stage).

R. Thymol, gr. i.
Menthol, grs. v.
Spirit. Vini Rect., ℥ss.
Aq., ad ℥ii.

M.

Sig. Dab on before applying a dusting powder (in irritable erythematous cases).

R. Pulv. Camphoræ, ℥ss.
Pulv. Zinci Ox., ℥iii.
Glycerini, min. x.
Acipis Benzoati, ad ℥i.

M.

Sig. Apply on lint night and morning. (Useful in the vesicular stage. Duhring.)

R. Olei Cadini, min. xv.
Acidi Salicylici, grs. xx.
Glycerini, ℥ss.
Ung. Diachyli, ad ℥i.

M.

Sig. To be rubbed in night and morning. (In the chronic squamous stage with thickened skin.)

R. Ichthyol, grs. v.—grs. x.
Bismuthi Subnit., ℥ii.
Paraffini Mollis, ad ℥i.

M.

Sig. Apply night and morning. (Useful in acute eczema of the face in children.)

Herpes Labialis et Preputialis :

R. Camphor Cryst.
Chloral Hydrat., āā ℥i.
M. et tere.

Sig. Apply with a camel's-hair brush (Jamieson).

Herpes Zoster :

R. Menthol, grs. x.
Camphor, grs. x.
Spirit. Vini, q.s.
Pulv. Zinci Ox.
Talc Venet, āā ℥ss.

M.

Sig. The dusting powder.

Hyperidrosis of feet :

R. Formalin (40%), min. xxv.
 Acidi Salicyl.
 Camphor trit., āā grs. x.
 Spirit. Rectif (70%), ad ʒi.
 M.

Sig. Apply several times daily.
 (after Schäffer).

R. Acidi Salicyl, grs. xv.
 Acidi Tannici, ʒi.
 Pulv. Radicis Iridis, ʒi.
 Pulv. Talci, ad ʒiii.
 M.

Sig. Dust on the parts after
 bathing (Merck).

Keloids (Digestion of keloid and thickened scars. Unna and Ahlswede) :

R. Pepsin, 10 c.cm.
 Acid. Hydrochlor., 1 c.cm.
 Phenol, 1 c.cm.
 Aq. Destillatæ, ad 200 c.cm.
 M.

Sig. Apply by day in the form of
 compresses covered with oiled silk.

R. Pepsin, grs. v.
 Acid. Hydrochlor., grs. v.
 Lanolini, ʒi.
 Paraffini Mollis, ad ʒi.
 M.

Sig. To be applied on lint at
 night.

Lichen ruber planus :

R. Acid. Carbol. Liq., min. x.
 Hydrarg. Perchloridi, gr. ½.
 Menthol, grs. x.
 Glycerini, min. xx.
 Spirit. Rect. (70%), ad ʒi.
 M.

Sig. Apply several times daily.
 (Antipruritic.) (After Schäffer.)

R. Ichthyol, ʒi.
 Liquor Carbonis Detergens,
 min. xv.
 Pulv. Amyli, ʒv.
 Pulv. Zinci Ox, ʒv.
 Glycerini, ʒiiss.
 Aq., ad ʒiii.
 M.

Sig. The paint :—Apply with a
 brush night and morning.

Psoriasis :

R. Resorcin.
 Ichthyol.
 Hyd. Ox Flav., āā grs. xv.
 Olei Cadini, ʒi.
 Lanolini, ʒii.
 Paraffini Mollis, ad ʒi.
 M.

Sig. Rub in night and morning
 (after Sabouraud).

R. Acidi Salicyl, grs. xxiv.
 Chrysarobin, grs. xxiv.
 Ol. Rusci, min. xxx.
 Saponis virid.
 Lanolini, āā ʒss.

Sig. For chronic cases. Rub in
 night and morning (after Dreuw.).

Pruritus :

R. Acid. Carbol. Liq., min. xxx.
 Liq. Carbonis Detergens, ʒi.
 Calaminæ Preparatæ, ʒiii.
 Glycerini, ʒss.
 Spirit. Vini Rect. (50%), ʒiii.
 Aq., ad ʒx.
 M.

Sig. Apply several times daily.

R. Camphor.
 Chloral, āā ʒi.
 rub up together and add—
 Lanolini, ʒii.
 Paraffini Mollis, ad ʒi.
 M.

Sig. Apply several times daily.

Urticaria :

R. Acid. Carbol. Liq., min. xv.
 Essent. Menth. pip., min. xv.
 Zinci Oxidi, $\overline{3}$ ii.
 Lanolini, $\overline{3}$ ii.
 Paraffini Mollis, $\overline{3}$ ss.

M.

Sig. Apply and cover with an
 inert dusting powder (after Brocq).

R. Hyd. Perchloridi, gr. $1\frac{1}{2}$.
 Aquæ Laurocerasi, $\overline{3}$ ss.
 Aq., ad $\overline{3}$ viii.

M.

Sig. Apply several times daily.

Seborrhœa capitis with loss of hair. Lassar's Routine (Wolff-Mulzer) :

1. Rub into the scalp the lather of a sulphur or tar soap for 15-20 minutes ;
 then rinse out with warm water.

2. Wet the scalp thoroughly for a few minutes with

R. Hyd. Bichlor., gr. $\frac{1}{2}$.
 Glycerini.
 Spirit. Coloniensis, $\overline{a}\overline{a}$ $\overline{3}$ ss.

3. Then massage into the scalp for 15-20 minutes

R. β -Naphthol, grs. iiss.
 Alcohol Absol., $\overline{3}$ i.

4. Then anoint the scalp with

R. Acidi Salicyl, grs. v.-grs. x.
 Tinct. Benzoin., min., xx.
 Ol. Olivarium, $\overline{3}$ i.

Sycosis (coccogenic) :

R. Hyd. Ammon., grs. x.
 Liq. Carbonis Detergens, min. x.
 Paraffini Mollis, $\overline{3}$ i.

M.

Sig. Apply night and morning
 (after Max Joseph).

R. Camphor Cryst.
 Acid. Carbol. Cryst., $\overline{a}\overline{a}$ $\overline{3}$ i.
 Spirit. rectificat, ad $\overline{3}$ ii.

M.

Sig. Apply night and morning
 (after Max Joseph).

Maderna reports good results from the treatment of Tinea Sycosis by intravenous injections of Lugol's fluid. This consists of iodine 1 gm., potassium iodide 2 grms., and distilled water 300 grms. The initial dose is 1 c.cm. diluted in 10 c.cm. of water. Injections are given every other day increasing the dose progressively up to 5 c.cm.

N.B.—As stated at the end of Chapter VI. (p. 168), soap should not be used for washing the scalp if any remedy containing resorcin is being applied. Tincture of Quillaia (half an ounce in ten ounces of water) may be employed instead, or the head may be washed in tepid water in which the yolk of an egg has been beaten up.

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